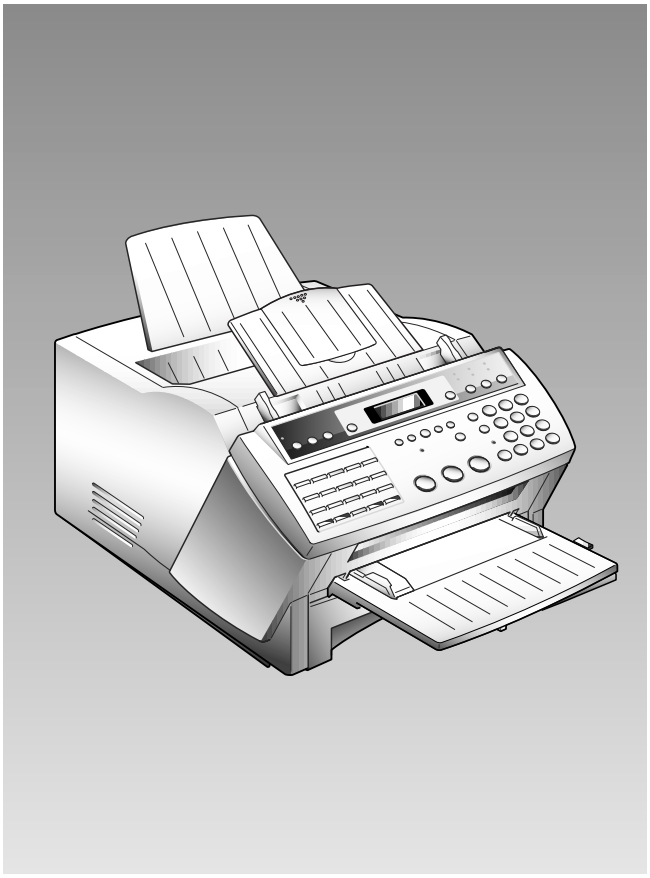
SAMSUNG

FACSIMILE

SF6500/SF6600

SERVICE *Manual*

FACSIMILE



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1. Precautions

Follow these safety, ESD, and servicing precautions to prevent personal injury and equipment damage.

1-1 Safety Precautions

1. Be sure that all built-in protective devices are in place. Restore any missing protective shields.

2. Make sure there are no cabinet openings through which people- particularly children- might insert fingers or objects and contact dangerous voltages.

3. When re-installing chassis and assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of this equipment, such as auxiliary connectors, etc. Such alterations and modifications will void the manufacturer's warranty.

5. Components, parts, and wiring that appear to have overheated or are otherwise damaged should be replaced with parts which meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.

6. Observe the original lead dress, especially near sharp edges, AC, and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board.

7. Product Safety Notice:
   Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they provide could be lost if a replacement component differs from the original. This holds true, even though the replacement may be rated for higher voltage, wattage, etc.

   Components critical for safety are indicated in the parts list with symbols ⚠ ⚠ . Use only replacement components that have the same ratings, especially for flame resistance and dielectric specifications. A replacement part that does not have the same safety characteristics as the original may create shock, fire, or other safety hazards.

Laser statement (Laserturvallisuus)

WARNING NEVER OPERATE AND SERVICE THE FAX WITH PROTECTIVE COVER REMOVED FROM LASER/SCANNER ASSEMBLY. THE REFLECTED BEAM, ALTHOUGH INVISIBLE, CAN DAMAGE YOUR EYES.

Class 1 laser product
Product laser de la première classe

Laser beam wavelength: 780nm
Longueur d'ondes de rayon laser: 780nm

Laser beam power: 0.18mW +/-0.009mW
Puissance de rayon laser: 0.18mW +/-0.009mW

1-2 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices", or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components.
The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, *which should be removed for your personal safety reasons prior to applying power to the unit under test.*

2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3. Use only a grounded tip soldering iron to solder or desolder ESDs.

4. Use only an "anti-static" solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.

5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one's foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

1-3 Lithium Battery Precautions

1. Exercise caution when replacing a Lithium battery. There could be a danger of explosion and subsequent operator injury and/or equipment damage if incorrectly installed.

2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.

3. Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal.

2. Specifications

2-1 Basic Features

Machine type :	Desk Top
Applicable line :	Public Switched Telephone Network (PSTN) or behind PABX
Compatibility :	CCITT Group 3, ECM
Data coding :	MH/MR/MMR
Modem speed :	33600/28800/14400/12000/9600/7200/4800/2400 bps
Transmission speed :	Approx. 2.6 sec. (V.34 ECM : 33600 bps)
Effective scanning width :	8.3 inches (210 mm)
Effective printing width :	8.2 inches (208 mm)
Scanning method :	Sheet-fed scanning using a Contact Image Sensor (CIS)
Memory :	4 MByte
Halftone :	64 levels
Printing speed :	6 PPM (Letter size)
Automatic document feeder :	30 pages
Phone :	Built-in handset
One-touch dial :	20 locations
LCD :	16 characters X 2 lines
Dimension (H X W X D) :	9.8 X 14.3 X 17.5 inches (249 X 363 X 446 mm) (trays and optional second cassette excluded)
Weight :	Approx. 33.1 lb (15 kg) (fully equipped) Approx. 22 lb (10 kg) (cartridge and recording paper excluded)
Power :	220V AC, 50/60 Hz

2-2 Technical Parameters

SCANNER

Scanning Method :	Sheet-fed scanning by CIS and step feeding of the document by a stepping motor
Resolution	
Horizontal :	11.8 lines/mm (300 dpi)
Vertical :	STANDARD : 3.85 lines/mm (98 Lpi) FINE : 7.7 lines/mm (196 Lpi) 11.8 lines/mm (300 Lpi) SUPER FINE : 15.4 lines/mm (392 Lpi)
Photo scale :	64 shades

Scanning period :	STANDARD : 5 ms/line FINE : 2.5 ms/line SUPER FINE : 2.5 ms/line
Document size	
Width :	5.8 to 8.5 inches (148 to 216 mm)
Length :	
Single page :	5 to 14 inches (128 to 356 mm)
Multi page :	5 to 11.7 inches (128 to 297 mm)
Manual assistance :	infinite
Weight	
single page :	12.5 Ib. ~ 32 Ib. (Thickness 0.07 ~ 0.15 mm)
Multi page :	12.5 Ib. ~ 24 Ib. (Thickness 0.07 ~ 0.15 mm)
Automatic document feeder (ADF)	30 sheets (Letter size/A4 size)
Class 1-5 :	10 sheets
Class 1-3 :	20 sheets

Thickness of document according to each class (Letter size/A4 size)

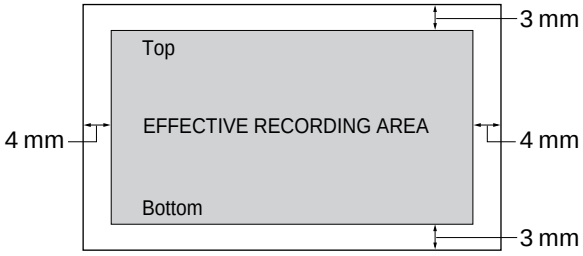
CLASS	THICKNESS	WEIGHT (U.S. POUND)	
1	0.075 mm	12.5 lb	
2	0.10 mm	20.0 lb	ADF: 30 sheets
3	0.12 mm	24.0 lb	ADF: 10 sheets
4	0.13 mm	28.0 lb	
5	0.15 mm	32.0 lb	

Scanning position	
Top edge :	2 mm 2 mm (0.079 0.079 inch)
Bottom edge :	0 mm 2.5 mm (0 0.098 inch)

PRINTER

Recording method :	Electrostatic image recording with LSU array
Printing speed :	6 pages (Letter size)/minute recording density Horizontal : 11.8 lines/mm (300 dpi) Vertical : 11.8 lines/mm (300 lpi)
Recording paper size :	A4 : 8.3 × 11.7 inches (210 × 297 mm) Letter : 8.5 × 11 inches (216 × 279 mm) Legal : 8.5 ×14 inches (216 × 356 mm)
Weight :	16 ~ 24 Ibs (60 ~ 90 g/m^2)
Thickness :	0.08 ~ 0.12 mm
Recording paper cassette	
Basic cassette :	250 sheets (Letter size/A4 size)
Reference weight :	75 g/m^2 (20 Ibs)

Effective recording area



First sheet copying time :	Less than 30 seconds
Warm up time :	Less than 30 seconds (at ambient temperature of 25 °C/77°F)
Recording paper stack	
Type :	Face down stack
Capacity :	100 sheets
Reference weight :	75 g/m² (20 Ibs)
Printing density and uniformity	
Density :	Greater than 1.0 O.D (Optical Density)
Uniformity :	Less than 0.3 O.D

MODEM

Modulation	
Group 3/ECM :	CCITT V.34
	CCITT V.17
	CCITT V.29 V.27ter
Binary signal :	CCITT V.21 T.30
Tonal signal :	CCITT T.30

SOUND

Key click :	Frequency 1.6 kHz, Duration 30 msec.
Alarm :	Frequency 1.6 kHz, Duration 2 msec.
Transmission completion :	Normal 1 sec./Error 1 sec.
Operator call :	15 sec. (1.28 sec. On/1.28 sec. OFF)

POWER SUPPLY

Input voltage :	220V AC, 50/60Hz
Power consumption	Standby : 13 watts Copy : 170 W (typical) 580 W (max.)
High voltage power supply	
Input :	24 Vdc, 1.0 A
Output :	4.0 kVdc at 100 Mohm (Transfer Voltage) -1.10 kVdc at 40 Mohm (Charge Voltage) -900 Vdc at 100 Mohm (Retransfer Voltage) -400 Vdc at 40 Mohm (Bias Voltage)

2-3 Second Paper Cassette (Option)

GENERAL

Dimension (HWD :)	4.2 x 14.1 x 16.1 inches (107 x 360 x 410 mm)
Weight :	approx. 11 lb (5 kg)

RECORDING PAPER SIZE

Size :	Letter size : 8.5 x 11 inches (216 x 279 mm) A4 size : 8.3 x 11.7 inches (210 x 297 mm) Legal size : 8.5 x 14 inches (216 x 356 mm)
Weight :	16 ~ 24 lbs (60 ~ 90 g/m^2)
Thickness :	0.08 ~ 0.12 mm

CASSETTE

Basic :	250 sheets (Letter/Legal/A4 size)
Reference weight :	75 g/m^2

REPLACEMENT CYCLE

Pickup roller :	Cleaning: 1 year / Replacement : 3 ~ 5 years or 50,000 sheets
Feed roller :	Cleaning: 1 year / Replacement : 3 ~ 5 years or 50,000 sheets

3. Installation

3-1 Document Tray

1. Insert two tabs on the document tray into the corresponding slot as shown.

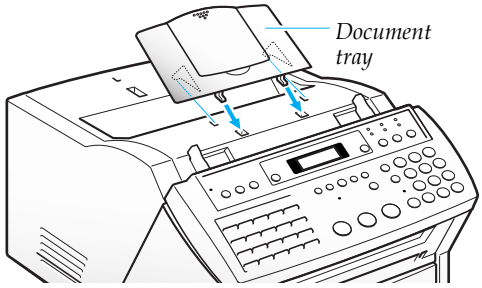


Figure 3.1

2. Fold out the extender on the document tray, if necessary.

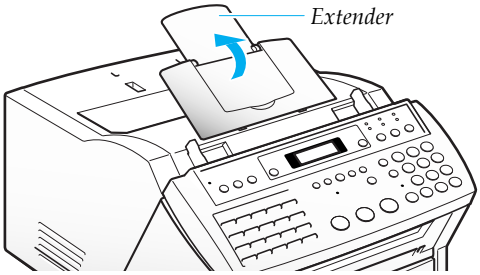


Figure 3.2

3-2 Document Exit Tray *(and Manual Feeder for upgraded model)*

The document exit tray catches documents fed through the machine from the automatic document feeder.

1. Insert two tabs on the document exit tray into the slots on the front of your machine.

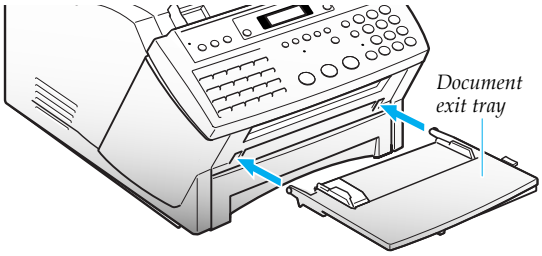


Figure 3.3

2. Fold out the extender, if necessary.

   The extender can be folded out up to 3 steps.

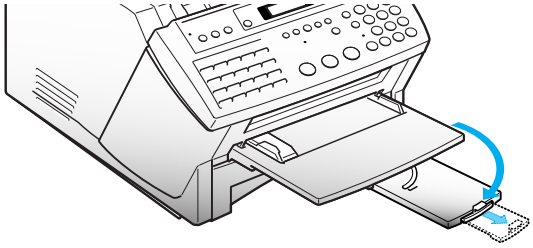


Figure 3.4

This tray is also used to feed envelopes or recording paper manually to print out PC job if your machine is upgraded to use with PC.

Adjust the guides to match the width of the paper.

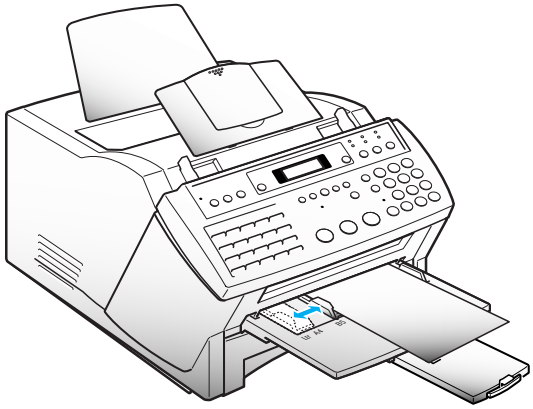


Figure 3.5

3-3 Printer Exit Tray

The printer exit tray supports printed output.

1. Insert two tabs on the printer exit tray into the slots on the top of your machine.

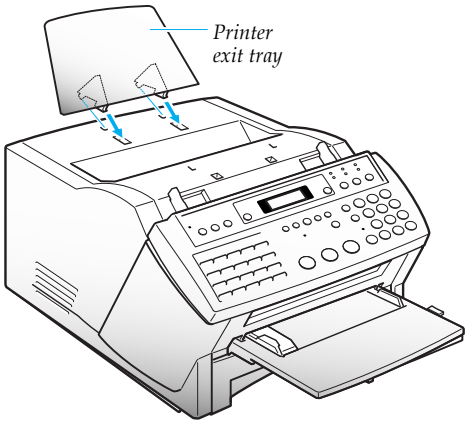


Figure 3.6

3-4 Telephone Line

Plug one end of the telephone line cord into the LINE jack and the other end into a standard phone wall jack.

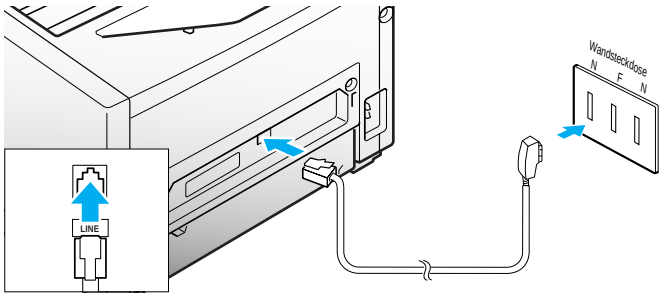


Figure 3.7

3-5 AC Power Cord

Plug one end of the cord into the back of the machine and the other end into a standard, grounded 3-prong AC power outlet.

The machine turns on. All lamps on the control panel light up and the LCD window displays '`WARM UP PLEASE WAIT`' then '`NO PAPER or NO CASSETTE`.' Load the paper as described on page 3-10.

If you want to power the machine off, unplug the power cord.

Note : If documents are lost from memory due to a power failure, the machine automatically prints a report when power is supplied.

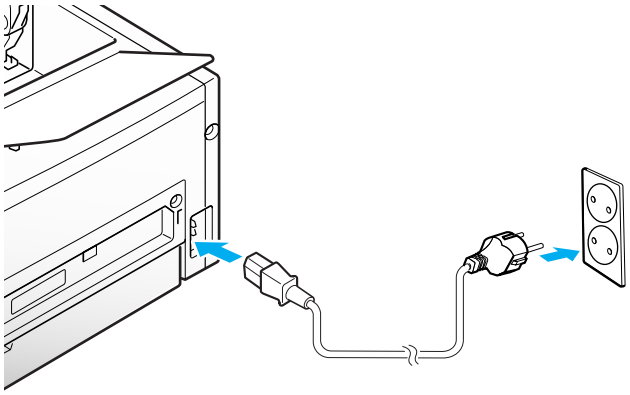


Figure 3.8

3-6 Second Paper Cassette (Option)

1. Unpack the second paper cassette box. It contains the second cassette, second cassette frame, and installation manual.

2. Unplug the power cord, and remove all trays from the fax machine.

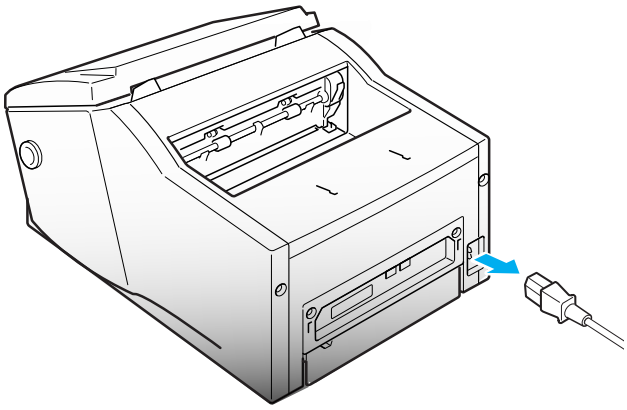


Figure 3.9

3. Press the cover release button to open the cover, and remove the toner cartridge. Then close the cover.

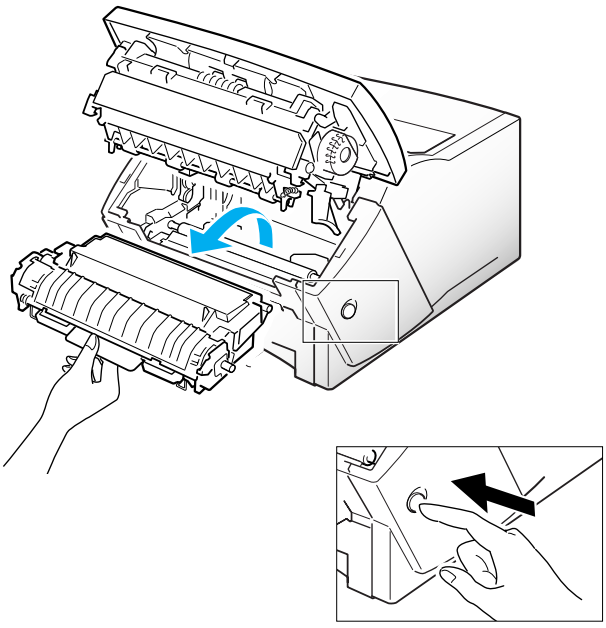
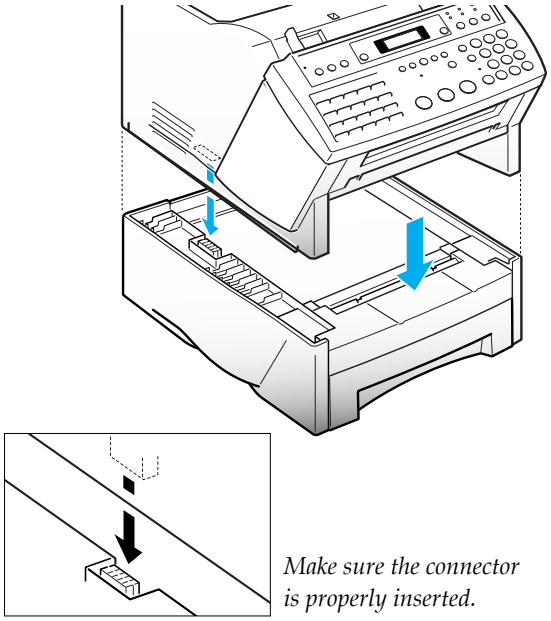


Figure 3.10

4. Carefully place the fax machine on top of the second cassette unit, keeping the machine level.



Make sure the connector is properly inserted.

Figure 3.11

5. Press the cover release button to open the cover and install the toner cartridge.

   Install all trays, and plug the power cord.

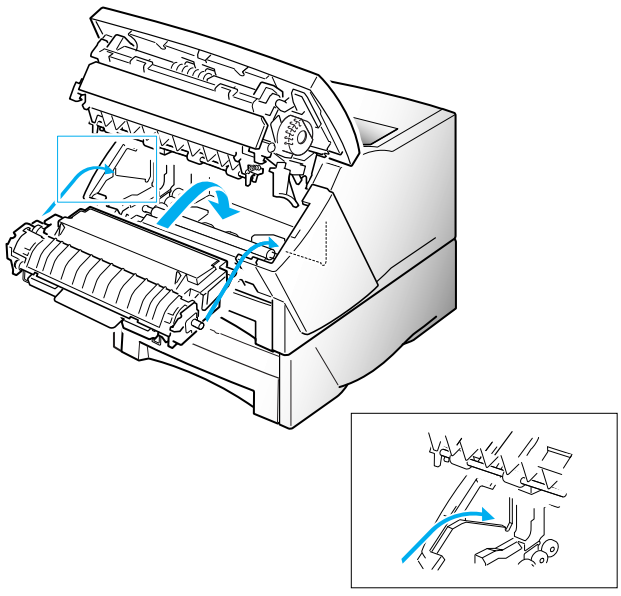


Figure 3.13

3-7 MFP Board (Option)

This board is required to upgrade this machine to use with PC for PC printing, scanning, and faxing.

1. Unpack the MFP box. It contains the MFP board, Printer cable, screws, Installation Software diskettes, and Installation manual.

2. Unplug the power cord.

3. Remove the two screws and take out the board cover.

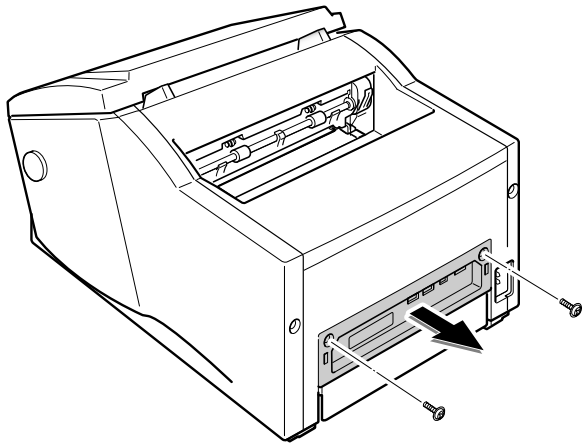


Figure 3.14

4. Unplug all the connectors from the board.

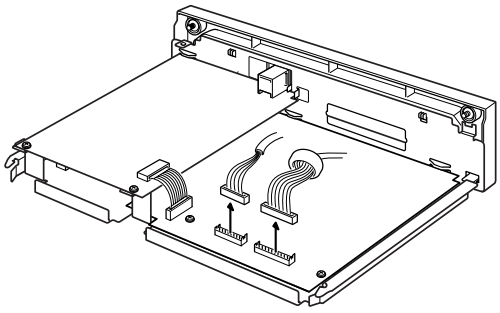


Figure 3.15

5. Remove the printer connector cover.

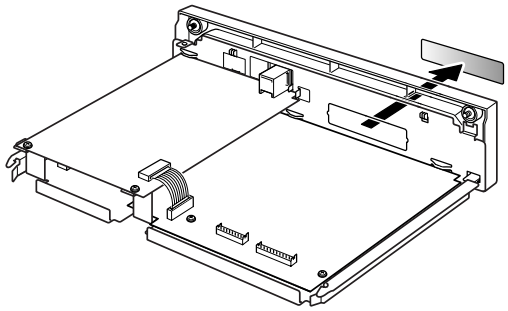


Figure 3.16

6. Insert the printer connector of the MFP board into its place, then push down the MFP board so that the P1 connector on the MFP board is properly installed into the P3 connector on the main board.

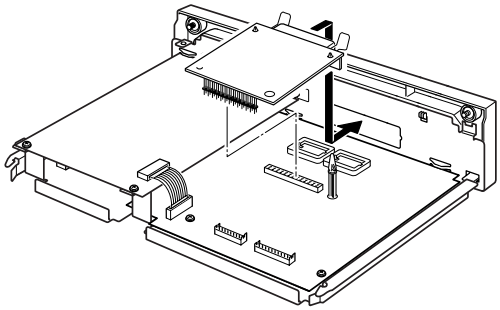
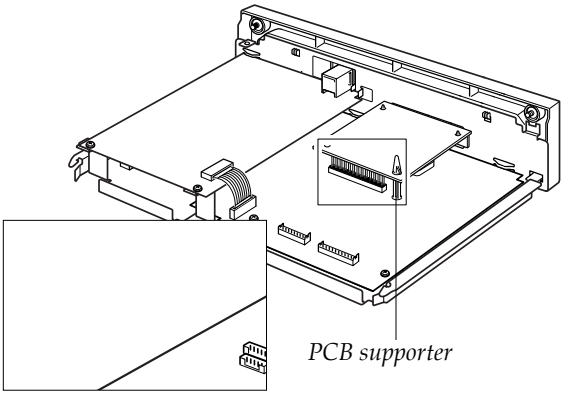


Figure 3.17

Make sure the PCB supporter is also properly inserted.



Insert the P1 connector fully until it stops.

Figure 3.18

7. Fasten the two screws to secure the printer connector to the main frame.

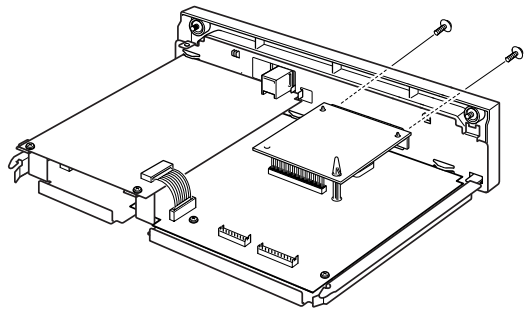


Figure 3.19

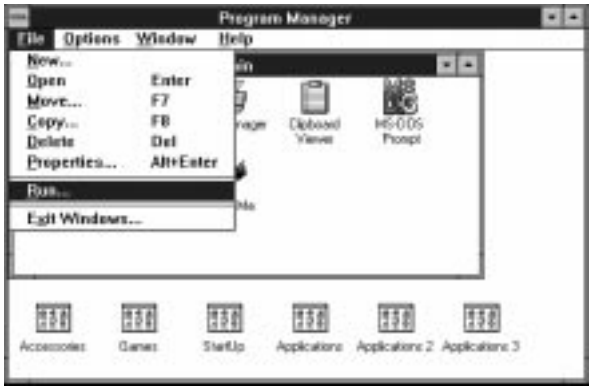
8. Plug all the connectors from the two boards into their places, replace the board cover, and fasten the two screws.

3-7 Installing the Printer Software

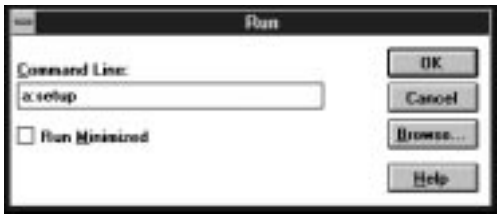
If you have installed the MFP board to this machine, now you need to install this printer software.

3-7-1 With Windows 3.1

1. Start Windows.
2. Insert the setup diskette into drive A (or B)
3. In Windows Program Manager, click on 'File', then choose 'Run'.



4. In the command box, type 'a:\setup (or b:\setup)', then click 'OK'.



5. Follow the instructions on the installation screens.
6. Restart Windows.

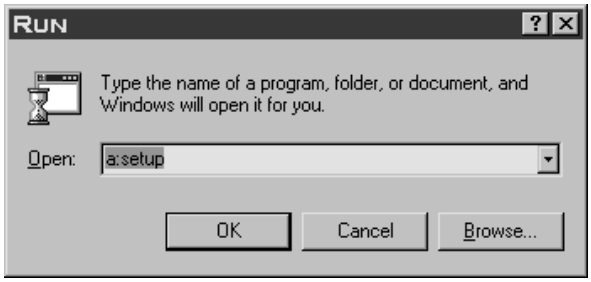
Note : For the latest information on installing and using the printer with Windows applications, consult the Read Me and Online Help files in the SF6000 Series MFP program group window.

3-7-2 With Windows 95

To install the printer software with Windows 95 :

1. Start Windows.
2. Insert the setup diskette into drive A (or B).
3. Click 'Start' on the desktop, and then choose 'Run'.

4. In the Run dialog box, type 'a:\setup (or b:\setup)', then click 'OK'.



5. Follow the SF6000 Series MFP Setup instructions. 'SETUP' will install the SF6000 Series software.

Note : Remove the floppy diskette from drive A (or B) before Windows is restarted.

6. Restart Windows 95.

3-7-3 Running Printer Software

HARDWARE/SYSTEM

Before using the Application Print commands, check that you have installed your printing device and software, and turned on the printer. Application does not show the Print menu if its options do not apply that is, if you have no scanner or the installed printer is not GDI-compliant.

BEFORE YOU PRINT

Make sure the SF6000 Series MFP is listed as your default printer in the Windows Control Panel.

Print as you normally would — for example, by choosing 'Print' from your applications 'File' menu.

CHANGING PRINTER SETTINGS

1. You can use paper sizes that are : letter - 8.5 X 11 inches, legal - 8.5 X 14 inches, and A4 - 8.2 X 11.7 inches. When you load the paper, adjust the paper cassette for the paper size you chosen, and make sure the proper size is set on these printer software.
2. You can choose the print orientation from Landscape and Portrait.
3. Resolution is fixed only 300 X 300 dpi.

CHOOSING PRINT OPTIONS FROM WINDOWS-BASED APPLICATIONS

The following steps are general instructions. Your Windows-based application may require a slight variation from procedure. For example, in step 3, your application may have a 'Printer' button in the 'Printer Setup' dialog box instead of an 'Options' button.

1. Open the application's 'File' menu.
2. Choose 'Print (or Printer) Setup.'
3. In the 'Print Setup' dialog box, choose 'Options' to open the 'SF6000 Series' dialog box.

4. Use the tabs to browse through the available options.

   After choosing print options, you are ready to print.

CHOOSING PRINT OPTIONS FROM WINDOWS CONTROL PANEL

1. In the Windows 'Main group' windows, double-click the 'Control Panel' icon.

2. From the 'Control Panel', double-click the 'Printers' icon to open the 'Printers' dialog box.

3. From the list of installed printers, select the 'SF6000 Series MFP.'

4. Click the 'Setup' button to open the 'SF6000 Series MFP' dialog box.

   After choosing options, you are ready to print.

3-7-4 Using SF6000 Series MFP Manager

The MFP manager configures and monitors the operations of the SF6000 Series MFP. It is a Windows program that silently runs in the background all the time. You can open the MFP Manager display by clicking on it's icon in the Control Panel menu. You can also terminate the MFP Manager at any time, if that is necessary. When you exit the MFP Manager it will offer you two options. One option is to terminate the SF6000 Series MFP, and the other option is to keep the MFP manager running in the background. If you decide to terminate the MFP manager than all current and future SF6000 Series MFP usage will be terminated until you restart the MFP manager or restart Windows. You can also restart the MFP manager from the Control Panel menu at any time.

CONFIGURE

Your SF6000 Series MFP can print, scan, and fax. It appears to your Windows computer as three separate peripherals: a Printer, Scanner, and a Fax Modem. These three peripherals appear to be three separate ports on the cable that attaches the SF6000 Series MFP to your computer. These three SF6000 Series MFP ports are configured automatically during installation. The cable is also configured automatically to attach to your computer's LPT1 during installation. However, you can change the Cable, Print or Fax configuration by pressing the Configure button.

Cable Port: This is the computer port to which you connect the SF6000 Series MFP cable. It is configured automatically to LPT1 during installation. LPT1 is also configured automatically to use IRQ (7) and DMA (channel 3) in Windows 3.x. You can connect the SF6000 Series MFP cable to another LPT port on your computer. You can also change the IRQ and DMA assignments for the LPT port in Windows 3.x. Please consult your computer hardware documentation for the appropriate IRQ and DMA assignments. You must restart Windows after you make changes to the Cable Port LPT, IRQ, or DMA configuration. The new assignments will become effective when Windows restarts.

Print Port: This port is pre-configured to LPT3 in Windows 3.x or LPT4 in Windows 95. You print Windows documents on the SF6000 Series MFP by connecting the SF6000 Series MFP printer driver to this Print Port. You only need to change the configuration of the Print Port if the LPT3 or LPT4 assignments are in conflict with your PC hardware or software. You can select another configuration of the Print Port between LPT2 and LPT9. When you change the Print Port configuration you will also need to open the Windows Printer Control and reconnect the SF6000 Series MFP printer driver of the new LPT assignment. You must restart Windows after you make changes to the Print Port configuration. The new assignment will become effective when Windows restarts.

Scan Port: This port is pre-configured to COM9 in Windows 3.x and Windows 95. Your SF6000 Series MFP Scanner software is automatically configured to connect to COM9. This assignment is fixed.

Fax Port: This port is pre-configured to COM3 in Windows 3.x and Windows 95. You can use the SF6000 Series MFP as a fax modem by connecting your Windows fax application to COM3. You only need to change the configuration of the Fax Port if the COM3 assignment is in conflict with your PC hardware or software. You can select another configuration of the Fax Port between COM3 and COM8. When you change the Fax Port configuration you will also need to reconnect your Windows fax application to the new COM assignment. You must restart Windows after you make changes to the Fax Port configuration. The new assignment will become effective when Windows restarts.

MONITOR

The MFP manager displays the status of SF6000 Series MFP ports when you press the Monitor button. Active jobs are indicated by the word 'Active' in the Cable, Print, Scan, or Fax port. A blinking dot also appears next to active port.

EXIT

The Exit button allows you to close the MFP manager display or terminate the MFP manager. The MFP manager will display a dialog box when you press Exit. The dialog box has a Cancel and OK buttons that mean the following:

Cancel button: This is the default button that you would normally press to close the MFP manager display and keep the MFP manager running in the background. The MFP manager must be running in the background when you want to use your SF6000 Series MFP.

OK button: This is the button you would press to terminate the MFP manager. You do not want to terminate the MFP manager under normal circumstances. This button is provided for the case when Windows requests that you terminate all running programs. The MFP manager is a Windows program that silently runs in the background all the time.

If you decide to press the OK button then all current and future SF6000 Series MFP usage will be terminated until you restart the MFP manager, or restart Windows.

You can restart the MFP manager from the Control Panel menu at any time. Double click on the SF6000 Series MFP icon in Control Panel, press the Exit button then press the Cancel button. The MFP manager will silently run in the background and you can use SF6000 Series MFP again.

UNINSTALL

The Uninstall button allows you to delete the SF6000 Series MFP software from your PC. When you press the Uninstall button, the SF6000 Series MFP manager will ask you to confirm that you want all SF6000 Series MFP software files removed.

If you press the OK button then all of the SF6000 Series MFP files are removed from your PC. Windows must be restarted when all of the SF6000 Series MFP software files are removed.

3-8 Memory (Option)

This machine is preset with two 2 Mbyte DRAMs at factory and can be upgraded up to 8 Mbytes by installing optional two 2 Mbyte DRAMs into the machine. There are two DRAM sockets on the main board of the machine. If you install one 2 Mbyte DRAM, you can use any socket. You must use KM48C2100 DRAM.

1. Unplug the power cord.

2. Remove the two screws and pull out the board cover.

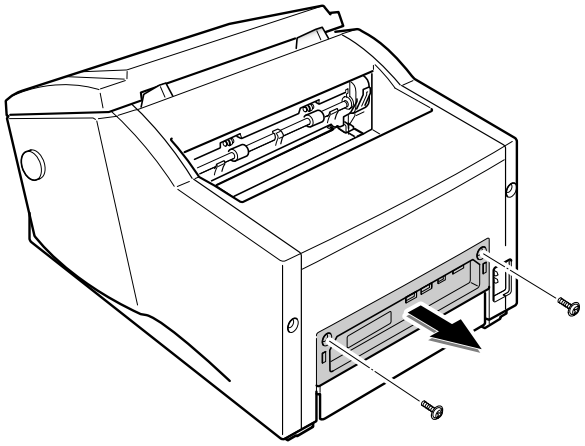


Figure 3.20

3. Unplug all the connectors from the boards, and take out the board cover.

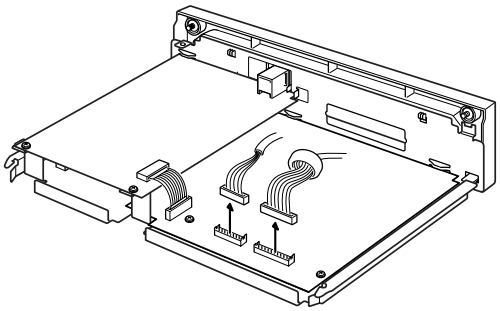


Figure 3.21

4. If an optional MFP board have been installed, remove the MFP board. See 'MFP Board' on page 6-34.

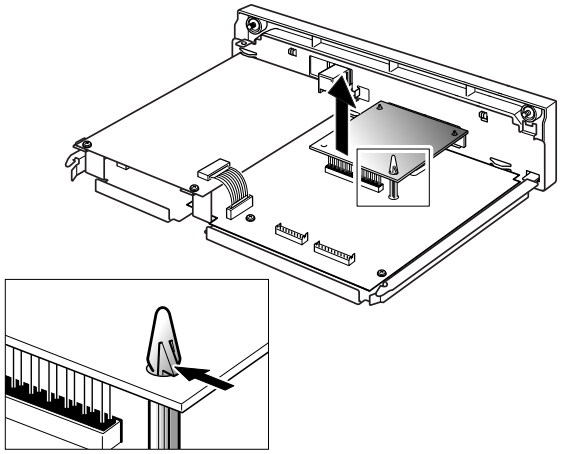


Figure 3.22

5. Insert one or two KM48C2100 DRAM IC(s) into the appropriate socket(s) on the main board.

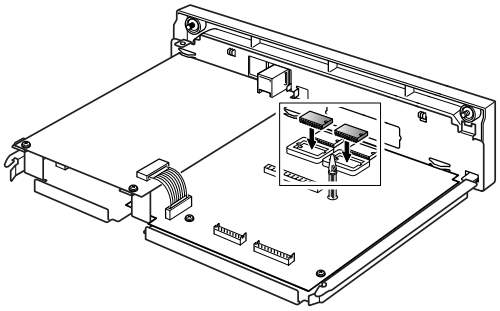
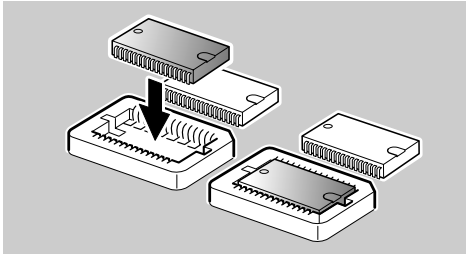


Figure 3.23

Note : You must observe the correct direction when you insert the IC. See the direction of the IC currently inserted.



6. Plug all the connectors into their places, install the MFP board if required, reinstall the board cover, and fasten the screws.

7. Plug the power cord to power the machine on.

8. Get into the Tech mode by Pressing **MENU, #, 1, 9, 3, 4**.

9. In Tech mode, Press **MENU,** and one touch 04 **'SYSTEM SETUP.'**

10. Press ▼ or ▲ repeatedly until you find 'DRAM TEST'.

11. Press **ENTER**. The LCD briefly displays 'TESTING...' then shows the result of the DRAM test as follows:

4M DRAM [OK]	: Optional two DRAMs are installed properly.
2MDRAM [EVEN-OK]	: Optional one DRAM is installed properly.
2MDRAM [ODD-OK]	
[NO DRAM] OR [DRAM FAIL]	: Optional DRAM is not installed or not properly. Check if the connection is made properly.

3-9 Loading Paper

The LCD displays 'NO PAPER or NO CASSETTE' when no paper is loaded. You can load approximately 250 sheets of paper.

1. Remove the paper cassette if previously installed, by pulling it out of the cassette port.

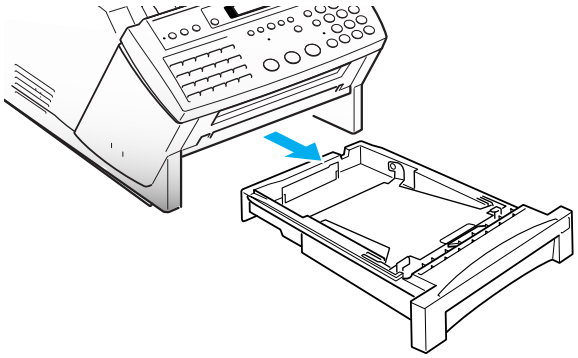


Figure 3.24

2. To load the paper into the cassette, press down the metal plate in the cassette.

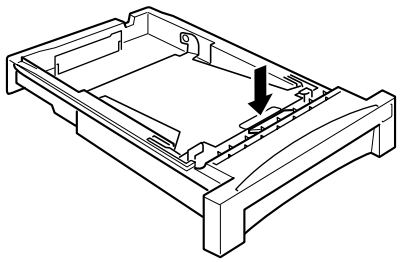


Figure 3.25

3. Fan the paper and insert the paper with the print side facing up.

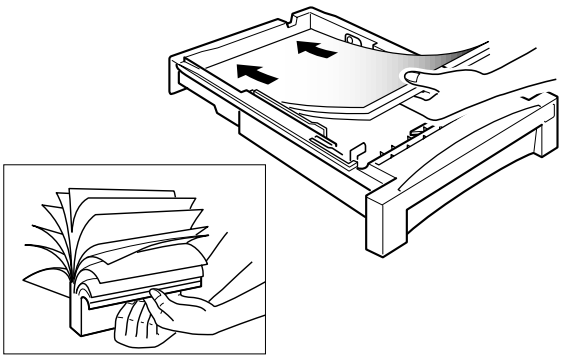


Figure 3.26

Note : If you fail to fan the paper, it may cause multi-paper feeding and jams.

4. Gently press the upper corners of the paper down under the cassette tabs.

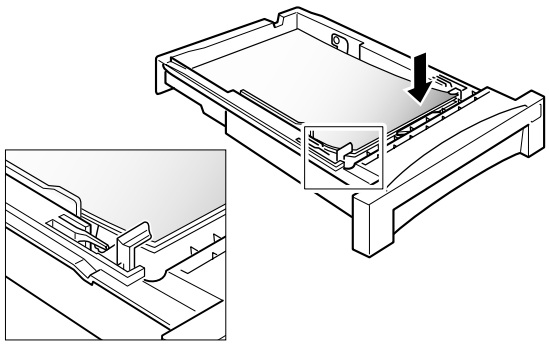


Figure 3.27

5. Insert the cassette into the port on the front of the machine until it stops.

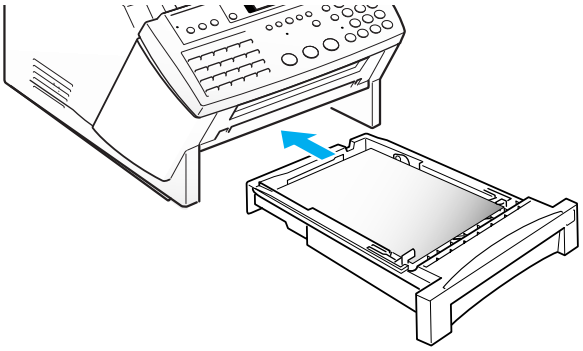


Figure 3.28

Adjusting Paper Guide

The following paper sizes can be used in your machine:

- ◆ Letter : 8.5 X 11.0 inches (216 X 279 mm)
- ◆ A4 : 8.3 X 11.7 inches (210 X 297 mm)

To use Letter size paper, change the position of the paper guide before loading paper.

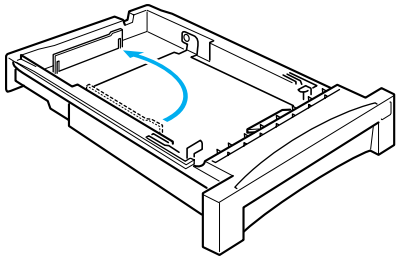


Figure 3.29

1. Remove one screw fastened the paper guide and take out the guide while pushing the low end inward.

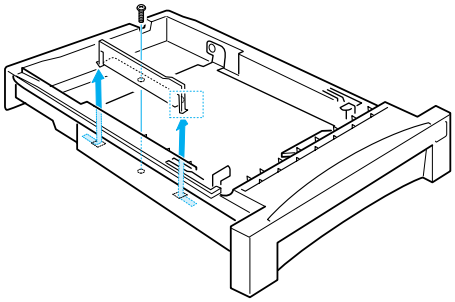


Figure 3.30

2. Insert the guide into the slots as shown in the figure and fasten the screw.

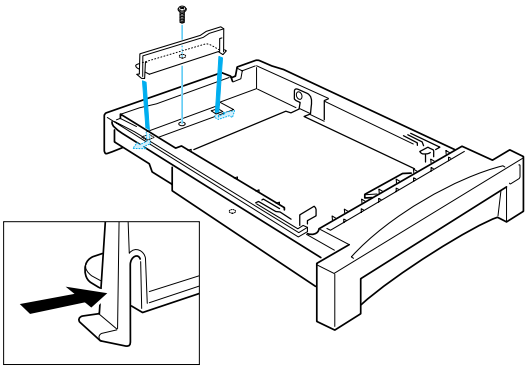


Figure 3.31

Note : If you want to change the recording paper size, you must set your machine to use the selected paper. See 'User Options' on page 3-16. Your machine is preset to use A4-sized paper.

Second Lower Cassette (Option)

An optional second cassette can hold three different-size paper; letter, legal, and A4. The paper cassette is preset to load the letter-sized paper. If necessary, adjust the cassette to the desired paper size. You can use two guides to adjust the cassette. Place the guides at the appropriate position for the paper size you want to use.

USING THE REAR GUIDE

1. There are three adjustable positions for the rear guide, which are marked with the corresponding paper size.

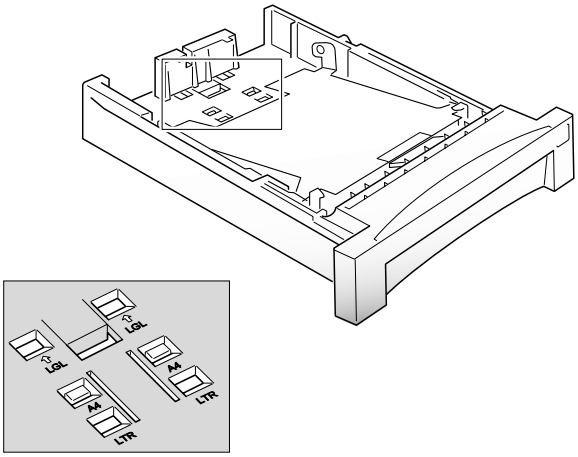


Figure 3.32

2. To move the rear guide, push down the tabs of the guide, and pull the guide inwards or outwards so that the tabs are placed at the desired position.

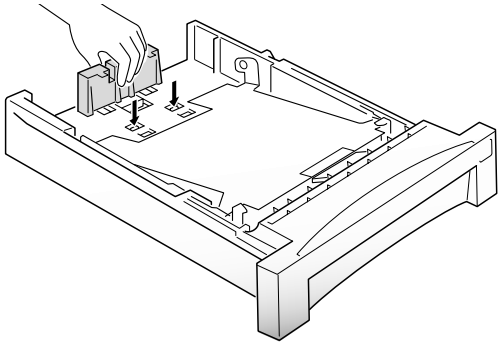


Figure 3.33

USING THE SIDE GUIDE

1. There are two adjustable positions for the side guide. If you are using A4 size paper, place the guide at the front position. Otherwise, place the guide at the back.

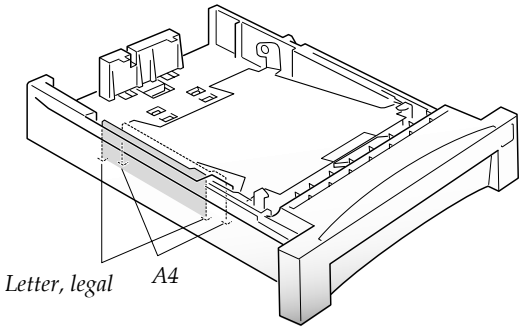


Figure 3.34

2. To move the side guide, remove the screw securing the guide and take out the guide while you push the legs of the guide inwards.

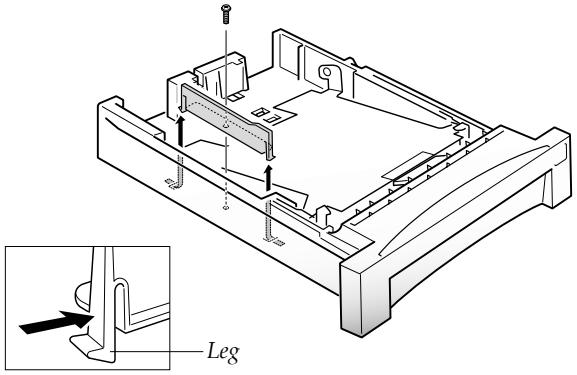


Figure 3.35

3. Insert the guide into the desired position and fasten the screw.

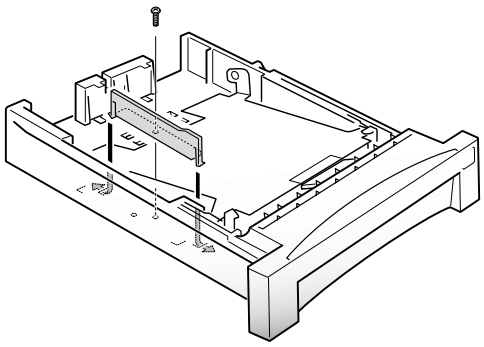


Figure 3.36

3-10 Installing or Replacing Toner Cartridge

When the toner supply is low, a 'TONER LOW' message will be displayed. Remove the toner cartridge and shake it several times. Several can still be printed before the toner supply runs out completely and the toner cartridge unit must be replaced.

When the toner supply is depleted, 'TONER EMPTY, REPLACE [CARTRIDGE]' appears in the display.

Supplies are available by contacting your local dex Business Systems representative.

Notes :
- When you replace the toner cartridge, you must replace the cleaning felt. If not, the print quality may be degraded.
- When you move the fax machine, do not move it with the toner cartridge installed in the machine. First remove the toner cartridge then carry the machine.

TONER CARTRIDGE

1. Press the cover release button, and fully open the operation unit assembly.

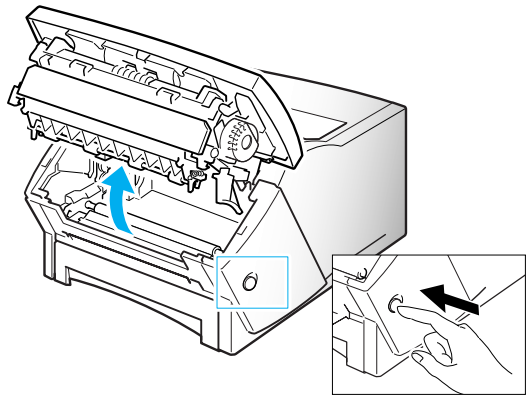


Figure 3.37

2. Hold the toner cartridge by the green tab and remove the used unit, if necessary.

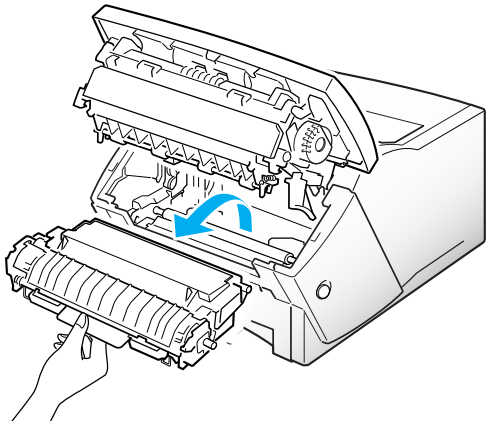


Figure 3.38

3. Unpack the toner cartridge.

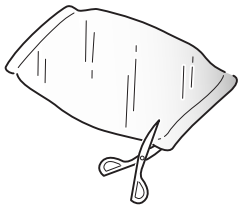


Figure 3.39

4. Hold the toner unit as shown below and gently shake it one side up, the other side down, and vice versa several times to distribute the toner evenly inside the unit.

Note : If the toner inside the unit is shifted to one side, it may cause degraded print quality.

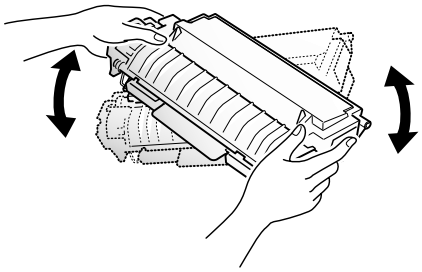


Figure 3.40

5. Remove the sealing tapes ① first, ② next, by pulling them straight out completely. Be careful not to tear them off.

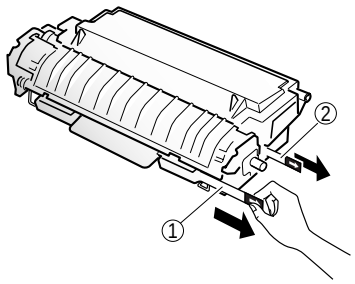
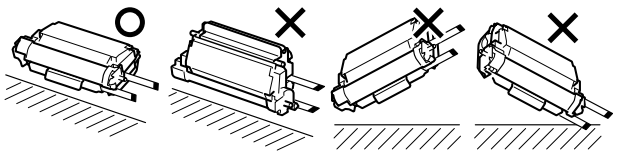


Figure 3.41

Warning : When you remove the sealing tapes, you must hold the toner cartridge horizontally and pull the tape evenly. Never tip the cartridge or turn the handle side down. This may cause degraded print quality.



6. Holding the toner cartridge unit in hand, fit the tabs on either side of the cartridge the either side of the compartment as shown, and slide it down firmly into your fax machine until it clicks in place.

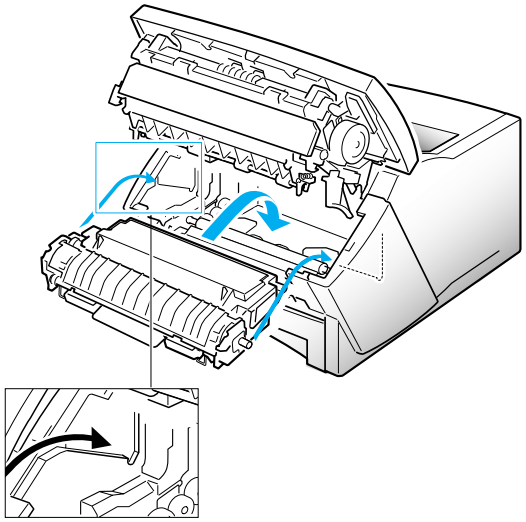


Figure 3.42

Warning : Your machine is designed to stop the machine operation and cut off the laser beam that can damage your eye if the cover is opened. However, for safety's sake, do not look at the LSU window in front where the laser beam might come out when you open the cover.

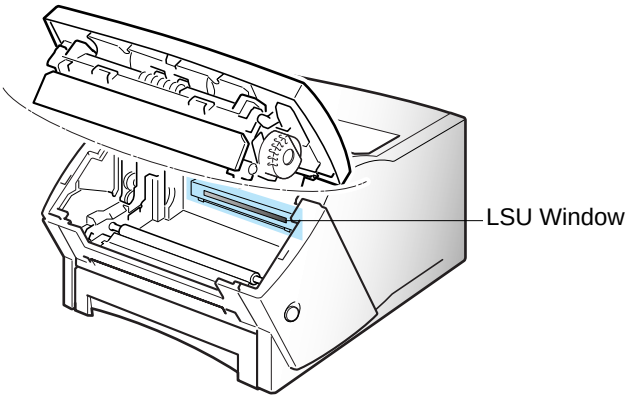


Figure 3.43

7. After installing the toner cartridge, close the operation unit assembly.

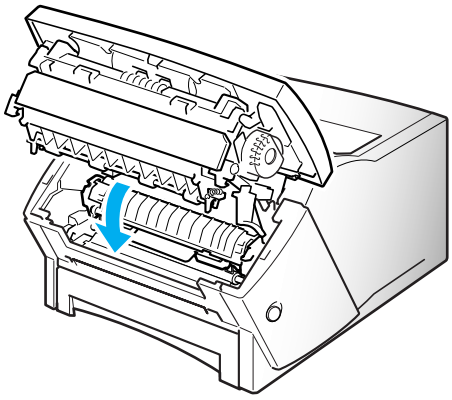


Figure 3.44

CLEANING FELT

1. Open the fuser cover by pulling the release lever.

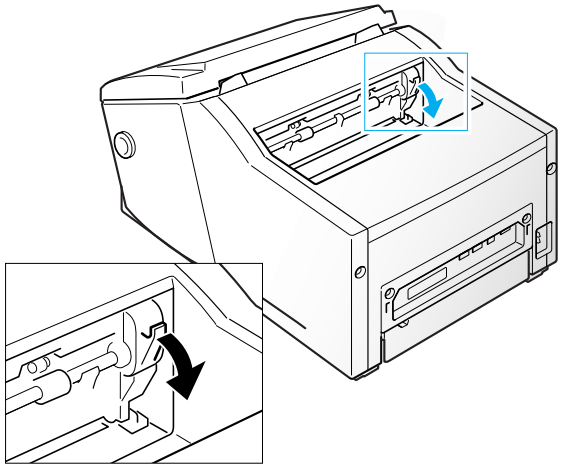


Figure 3.45

2. Remove the cleaning felt used.

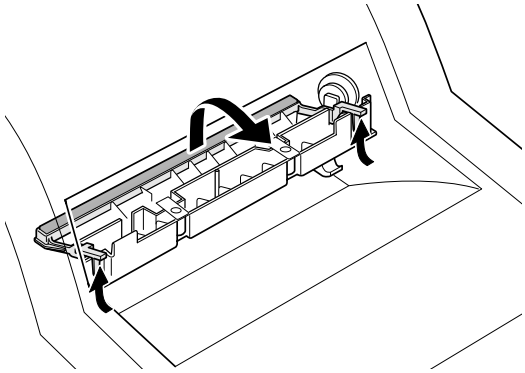


Figure 3.46

3. Insert new cleaning with the white felt faced out as show.

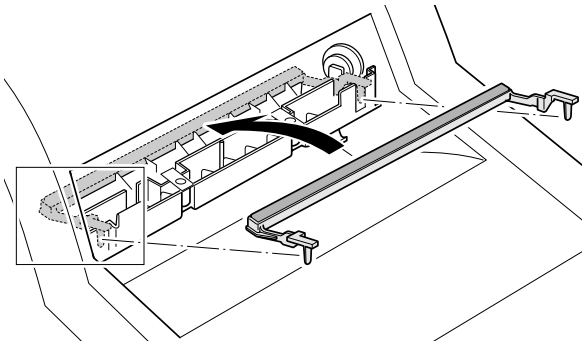


Figure 3.47

4. Close the fuser cover.

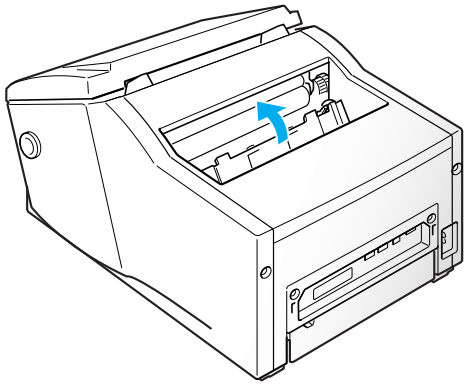


Figure 3.48

Note : You must install a new cleaning felt when you install a new toner cartridge. If not, the print quality may be degraded.

3-11 Memory Clear

3-11-1 Memory Clear in User Mode

In the user mode, you can selectively clear information stored in this machine's memory. The list of data you can clear is as follows:

1:SYSTEM ID : your terminal ID number and name are erased from the machine's memory.
2:SYSTEM DATA : restores user-selectable options to the default value.
3:DIAL & DELAYED : clears the One-Touch, Speed Dial, or Group Dial numbers stored in memory. In addition, all the delayed time operations you have reserved are also canceled.
4:TX-RX JOURNAL : clears all records of transmissions & receptions.

1. If the machine is in the tech mode, return to the user mode by pressing **MENU, #, 1, 9, 3, 4** in sequence.
2. Press **MENU**, and the one-touch key 5 '**MEMORY CLEAR**'.

   The LCD displays the type of memory you can choose.
3. Scroll to the options by pressing ▼ or ▲ until you find the one you want to clear. When the cursor blinks under the memory you want to clear, press **ENTER**.

   Otherwise, you can enter the number of the memory.
4. The LCD prompts you to confirm your selection. Press **ENTER**. If you press **STOP**, the machine returns to Standby Mode.

3-11-2 Memory Clear in Tech Mode

Memory clear, contained in the tech mode, is used for clearing all the user's data in memory and setting to default status.

1. If not in the tech mode, Press **MENU, #, 1, 9, 3, 4** in sequence to initiate the tech mode.
2. Press **MENU**, and the one-touch key 5 '**MEMORY CLEAR**'.

   The LCD displays 'MEMORY ALL CLEAR'.
3. Press **1** to clear all memory.

   If you want to cancel, press **2**. The machine returns to Standby Mode.

3-12 System Data Set-up

There are system data settings that are set by the user in the user-mode, and system data settings set by the technician in the tech mode.

3-12-1 System Data Settings in User-mode

The fax machine has various user-selectable functions. These functions are usually selected during the initial setup of the machine, and there should be little need to change them there after.

Note : Before you begin, print out the system data list to see the current settings. To print the system data list, press **MENU**, and one-touch 19 '**SYSTEM DATA**.'

1. Press **MENU**, then one-touch 01 '**SYSTEM DATA**.'

   The LCD displays user-selectable options.
2. Scroll to the options by pressing ▼ or ▲ repeatedly.
3. When the option you want appears in the display, enter the number for the desired status. You can use ◄ or ► button and press **ENTER** to select the desired status.

3-12-2 User-Selectable Options

These instructions assume you've followed the steps under 'System Data Settings in User-mode' and the machine is asking if you want to change one of the options listed here.

Paper Size—Select the paper size you will use for the recording paper.

Press 1 for letter (LTR) or, 2 for A4 size paper.

If your machine is equipped with an optional lower cassette, select the paper size for the lower cassette.

Press 1 for letter (LTR), 2 for A4, or 3 for legal (LGL) size paper.

Message Confirmation Report—A confirmation report shows whether the transmission was successful or not, how many pages were sent, etc.

Press 1 to print out journal automatically each time you send a fax.
Press 2 to print only when an error occurs and the transmission was not successful.

Auto Print Journal—A journal report shows specific information concerning transmission and reception activities, the time and dates up to 50 of the most recent transmission and reception.

Press 1 to print journal automatically after every 50 transmission and receptions.

Press 2 to print journal manually.

Remote Receive Start Code—The remote receive code allows you to initiate fax receive from an extension phone. If you pick up the extension phone and hear fax tones, enter the remote receive code and the fax will start receiving. The password is preset to ✳ 9 ✳ at factory.

Enter the desired code 0 to 9 on the number keypad.

Power Save Mode—The power save mode allows you to shut off the machine's printer heater automatically after a document is printed, to conserve electricity and reduce your utility bills. The fax machine automatically turns on the printer again when it receives a document or is instructed to make a copy. In this mode, it takes the machine a little longer to print out fax messages or copies since it must first re-heat the printer.

Press 1 to turn this feature on. If you want to set the time duration that the machine activates the power save mode, enter the time in 24-hour format.
Press 2 to turn this feature off.

Dial Mode—Select the type of dial system your fax machine is connected to.

Press 1 if the fax machine is connected to a tone (Touch Tone) dial line.
Press 2 if the fax machine is connected to a pulse (Rotary) dial line.

Security Communication—This mode allows your fax machine to send and receive documents to and from a predetermined location where the fax machine has the security code that matches your security code.

Press 1 to turn on the Security Communication mode.
Press 2 to turn off the Security Communication mode.

Error Correction Mode—This mode compensates for poor line quality and ensures accurate, error-free transmission with any other ECM-equipped facsimile machine. If the line quality is poor, transmission time may be increased when ECM is enabled.

Press 1 to turn on the error correction mode.
Press 2 to turn off the error correction mode.

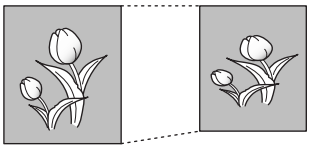
Automatic Reduction in Receiving—When receiving a document as long as or longer than the paper installed in your machine, the machine can reduce the data in the document to fit on your recording paper size. The machine will reduce the data in vertical. If you have an optional lower cassette, your machine will automatically select the cassette in which the desired-size paper is loaded.

Turn on this feature if you want to reduce an incoming page that may otherwise need to be divided into two pages with only a few centimeters on the second page. If the fax machine cannot reduce the data to fit into one page with the feature enabled, the data is divided and printed in actual size on two or more sheets if needed.

Press 1 to turn this feature on.

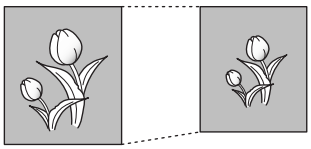
Press 2 to turn this feature off. The overflowed data will be printed out on a second page.

Horizontal Reduction—When you turn on the automatic reduction feature and an incoming page contains overflowed data, the machine reduce the data only in vertical as shown below.



Original *Received data*

If you want to reduce both in vertical and horizontal at the same rate in order to maintain height to width relationships, use the horizontal reduction option. If you turn on this feature, the machine reduces the data as shown below.



Original *Received data*

Press 1 to turn this feature on.
Press 2 to turn this feature off.

Automatic Discard Size—When receiving a document as long as or longer than a standard letter size paper installed in your fax machine, you can set the fax machine to discard any excess image at the bottom of the page to fit the recording paper size.

If the received page is outside the margin you set, it will be printed on two sheets of paper at the actual size.

If the data is within the margin, and the Rx Reduction feature is turned on, it will be reduced to fit in the appropriate size paper (Discard does not take place). If the Rx Reduction feature is turned OFF or fails, the data within the margin will be discarded.

Enter the desired discard size using the number keypad, and press **ENTER**.

Automatic Redial Term—Your fax machine can automatically redial a remote fax machine if it was busy or does not answer the first call.

Enter the number of minutes (from 1 to 7) using the number keypad.

Automatic Redial Try—Enter the number of attempts (from 0 to 7) to redial the number before giving up.

If you enter 0, the machine will not redial.

Ring Before Answer—You can select the number of times your machine rings before answering an incoming call. If you are using your machine as both a telephone and a fax machine, we suggest you set the ring count to at least 4 to give you time to answer.

Enter a number from 1 through 7 on the number keypad.

Smoothing—The smoothing feature enhances the appearance of incoming faxes by making the lines smooth and takes no additional time. This function does not apply to outgoing faxes, or to lists or reports you print. It is recommended to turn this feature on for text data, turn it off for picture image.

Press 1 to turn the feature on.
Press 2 to turn the feature off.

Continuous Polling Report—Every time continuous polling ends, a multi-communication report will be printed to show the result for each registered station.

Press 1 to print the report automatically each time continuous polling ends.
Press 2 to turn the feature off. The report will not be printed.

Forced Memory Transmission—If you are annoyed that you have to wait until documents in the feeder are sent out when you try to send or reserve another fax, turn this feature on. This feature enables all transmission documents are automatically scanned into memory before transmission. Memory might be full.

Press 1 to turn this feature on.
Press 2 to turn this feature off. The LCD display prompts you to choose either to scan the documents into memory or not before dialing the number when you try to send or reserve a fax.

Receive Terminal Identification—This feature allows the machine to automatically print the receive terminal ID (if registered), page number, reduction rate, and the date and time of the reception at the bottom of each page of a received document.

Press 1 to turn this feature on.
Press 2 to turn this feature off.

Print Priority Term—This option is available only when you install an optional MFP board into your machine. When you want to print a PC document while the machine prints a received fax on the recording paper, you can interrupt the printing and print the PC document. Press the **PRINT PRIORITY** button to enable the feature. The LCD displays PP on the lower line, right corner. The interrupted fax data will be stored in memory. To disable, press the **PRINT PRIORITY** button again. PP on the LCD disappears.

You can set your machine to turn the feature off automatically if there is no further data printed within 30 minutes or 8 hours after PC printing.

Press 1 to select 8 hours. The machine turns off automatically 8 hours after PC printing is completed.
Press 2 to select 30 minutes. The machine turns off automatically 30 minutes after PC printing is completed.

3-14-3 Confiming System Data Settings

Confirm the system data settings by printing out a system data list.

1. If not in the tech mode, press **MENU, #, 1, 9, 3, 4** in sequence to initiate the tech mode.

2. Press **MENU**.

3. Press one of the one-touch PRINT keys 16-20. The LCD displays the lists you can print out.
4. Press ▼ or ▲ until you find 'SYSTEM DATA LIST'.

5. Press **ENTER**. The machine prints the system data list.

   The system data list printed in the tech mode contains the system data set in the tech mode as well as in the user mode. The model number and software version will be printed at the bottom of the system data list.

3-14-4 System Data Settings in Tech-mode

Various technical features of fax machine are provided with optional parameters. Set the features to the user's need according to the following procedure.

1. If not in the tech mode, press **MENU, #, 1, 9, 3, 4** in sequence to initiate the tech mode.

2. Press **MENU**, one-touch 1 '**SYSTEM DATA**.'

   The LCD displays 'TECH MODE SYSTEM DATA?'.

3. To set the system data available in tech mode, press **ENTER**.

   If you want to set the system data available in the user mode, press **STOP**. The LCD displays 'USER MODE SYSTEM DATA?'. Press **ENTER** to set the system data available in the user mode.

4. The LCD displays the options you can choose. In tech mode, the LCD displays the technician-selectable options as well as all the user-selectable options.

5. Scroll to the options by pressing ▼ or ▲ repeatedly.

6. When the option you want appears in the display, enter the number for the desired status. You can use ◄ or ► button and press **ENTER** to select the desired status.

   You can exit from setup mode at any time by pressing **STOP**. When you press **STOP**, the machine stores the options you've already changed and returns to Standby mode.

FEATURE	PARAMETER	FUNCTION
Modem Speed	33600/28800/ 14400/12000 9600/7200 4800/2400 bps	The maximum Tx speed can be limited to 33600, 28800, 14400, 9600, 7200, 4800 or 2400 bits per second. When the Tx speed is set to 33600 or 28800, the Rx speed can be V.34. When the Tx speed is set to 14400, the Rx speed can be either V.33 or V.17 speed. When the Tx speed is set to 9600 or 7200, the Rx speed can be either V.29 or V.27ter speed. When the Tx speed is set to 4800 or 2400, the Rx speed can be any V.27ter speed.
Error Rate	6%, 12%	If the error rate exceeds the chosen rate, fall back occurs which will lower the baud rate automatically down to as low as 2400 baud until the error rate is less than the chosen rate.
Tx Level	-4 ~ -15 dBm	You can set the level of transmission signal. Typically, Tx level should be under -12 dBm. The level within the range of -4 dBm to -15 dBm is acceptable. Enter the desired value using the dial keypad.
Super Fine Scan to Memory	off/200/300 dpi	This feature allows the machine to scan documents in super fine resolution (200 X 400 dpi, 300 X 300 dpi). The other machine can receive super fine image. If the remote machine is not capable of receiving super fine data, your machine fails to send documents and displays 'INCOMPABLE ERROR'.
Ring On Check Time		The machine must receive a ring signal with a specified active time from a telephone exchange in automatic reception mode. The detection time that the machine considers valid is adjustable via this option. If the active time of the ring signal is less than the set value of the Ring On Check Time,the machine will not consider it a ring signal.
Ring Off Check Time		The machine must receive a ring signal with a specified inactive time,as well as an active time. If the inactive time of the ring signal is longer than the value of the Ring Off Check Time,the machine will not consider it a valid ring signal.

3-14 LCD Display

3-14-1 During Communication

In user mode, the LCD shows the remote machine's TTI number, TX or RX communication type, (modem speed), and page number.

In service mode, the display shows the communication type, abbreviations for the CCITT Group 3 T.30 protocol as they occur, the protocol type (G3), baud rate in kbps, and line time.

3-14-2 If a Communication Problem Occurs:

In user mode, the display shows one of the following:
`PAPER JAM, COMM.ERROR, LINE ERROR.`

In service mode, the display shows all error messages available in user mode, as plus additional error messages available only in Service Mode.

Error messages shown in service mode only are as follows:

`PRE-MESSAGE ERROR` : problem occurred during phase B of session.
`POST-MESSAGE ERROR` : problem occurred during phase D of session.
`MESSAGE ERROR` : problem occurred during phase C of session.
`LINE ERROR` : machine cannot connect or has lost connection with the remote machine.

Additional messages, not shown above, will appear in the TX/RX journal printed in service mode.

5. Circuit Descriptions

5-1 Main PBA

The main board consists of CPU, System controller, Fax modem, Modem interface, Image processor, Printing ASIC, I/O port gate array. Detail description is provided below.

5-1-1 Memory & I/O Map

BMC (Bus and Memory Controller) in the system controller interfaces directly with CPU, ROM, SRAM, and I/O.

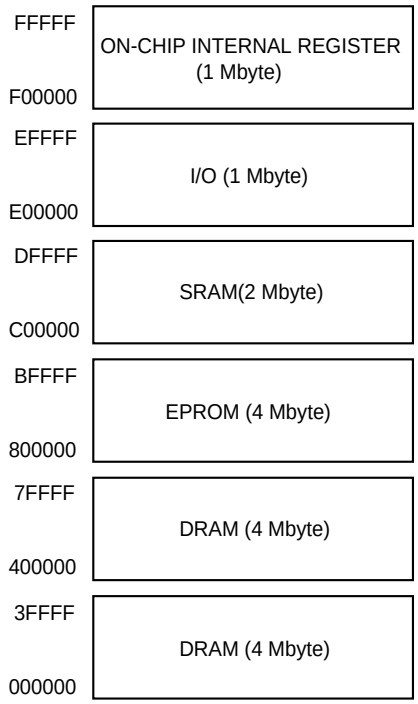


Figure 5-1 Memory & I/O Map

5-1-2 CPU and System Controller

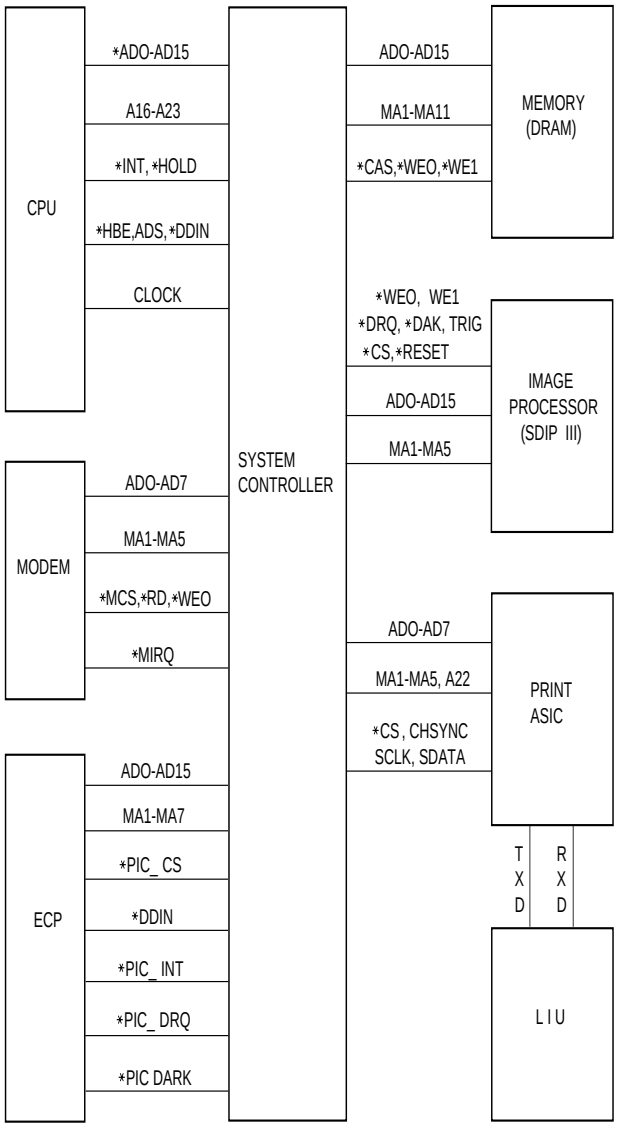


Figure 5-2 Hardware Interface Signals

5-1-3 System Clock

A high-speed clock and low-speed clock are used for the system controller. The high-speed clock 39.3216 MHz is generated at external oscillator and applied to the system controller. The CPU divides the high-speed clock in two. They will be used for bus clock and system clock source. The low-speed clock is used for elapse time counter and refresh rate counter.

5-1-4 Reset

When +5V power is higher than +4.5V (typically), the voltage detector PST520C output goes 'High.' The gate array generates CPU reset signal (Low) to initialize the CPU. It causes the system controller and peripheral device to be reset. When +5V power drops below +4.5V, the voltage detector PST520C output goes 'Low' and alerts main power fail through CPU NMI (Non Maskable Interrupt) pin and system controller PFAIL pin.

5-1-5 Bus & Memory Control

System controller BMC (Bus and Memory Controller) interfaces directly with CPU, ROM, SRAM, DRAM, and I/O device and generates WAIT signal. BMC is divided into five zones by decoding high-order address. The select signals are SEL0 (ROM select), SEL1 (SRAM select), and SEL2 (Gate Array select). It reads and writes data when /RD, /WE0, /WE1, and /OE signal go 'Low'. Reading is activated always in Word-wide, and writing is in Even byte when /WE0 goes 'Low', Odd byte when /WE1 goes 'Low' and Word-wide when both signals go 'Low.' DRAM access is controlled by /RAS0, /RAS1, and /CAS. In order to access 8 Mbyte, /RAS0 is bank selected by ASIC.

5-1-6 Scanner Control

IMAGE SENSOR

The CIS equipped with 300 dpi scanning density and 2.5 ms for 1 line storage time.

IMAGE PROCESSOR

It supplies clock signal into CIS and performs shading correction, AGC, edge emphasis, correction, 64 gray levels, DMA, horizontal reduction from 300 dpi A4 to 203 dpi A4.

SCAN MOTOR CONTROL

It supplies four phase strobes from system controller to scan motor driver. Motor drives as follows:

Motor Function	Strobe Pulse	Phase
Copy	400 pps	2-phase
Quick scan	600 pps	2-phase
Fine mode	600 pps	2-phase
Super fine mode	600 pps	1/2-phase

5-1-7 ASIC

ASIC is composed of LSU (Laser Scanning Unit) interface, dpi conversion mode, smoothing mode, external chip select decoder, DRAM bank select, I/O port, print data line memory control, and UART. In print mode, there are pass mode and conversion mode. In pass mode, copy is made by scanning at 300 dpi and printing at 300 dpi. In conversion mode, it prints the received data after 406 dpi conversion through smoothing. UART is also equipped to communicate with I-LIU chip in 9.6 k bps serial. LSU interface timing diagram is provided below.

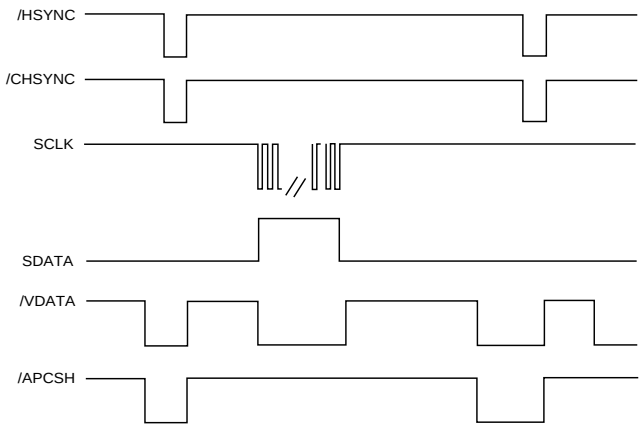


Figure 5-3 LSU Interface Timing Diagram

5-2 OPE PBA

OPE board consists of Micom, LED, key matrix, document detect sensor, and scan position sensor. When a user presses a key, the key input data is applies to Micom through the key matrix. Micom applies the corresponding code to the main board through UART (Universal Asynchronous Receiver Transmitter). The main board sends out the data from Micom to LCD or LED to display the information.

5-3 Mother PBA

This board supplies power from SMPS to other boards and connects signals from the main board to HVPS, Scan, LSU, and mech boards.

5-4 HVPS PBA

This HVPS (High Voltage Power Supply) supplies -400 VDC bias voltage into the magnet roller, -1100 VDC charging voltage into charging roller, 4000 VDC transfering voltage and -900 VDC retransfering voltage into the transfer roller.

5-5 Scan PBA

This board consists of Scan motor drive IC (SLA7024M), CIS, and OPE PBA interface connector. It is connected to the main board through the mother board.

5-6 Mech PBA

This board contains the main motor driver IC (SLA7020M), speaker, solenoid, and 2nd cassette connection switch.

5-7 MFP PBA (Option)

This board controls PC interface function, such as PC printing, scanning, and PC faxing. It controls the data signal between PC and this machine. This board contains 40-pin connector to connect to the main board, 36-pin centronics connector to connect to PC, and CL-CD1283 chip, 74LS245, 74HC00 to perform IEEE-1284 operation.

5-8 LIU PBA

The LIU (Line Interface Unit) PBA performs a function of modem AFE interface, line signal in/output, off-hook detect, ring signal detect, MF/DP dialing, TAD interface, and telephone circuit. It also contains protection circuit to avoid damage from lightning or line. The function diagram is provided below.

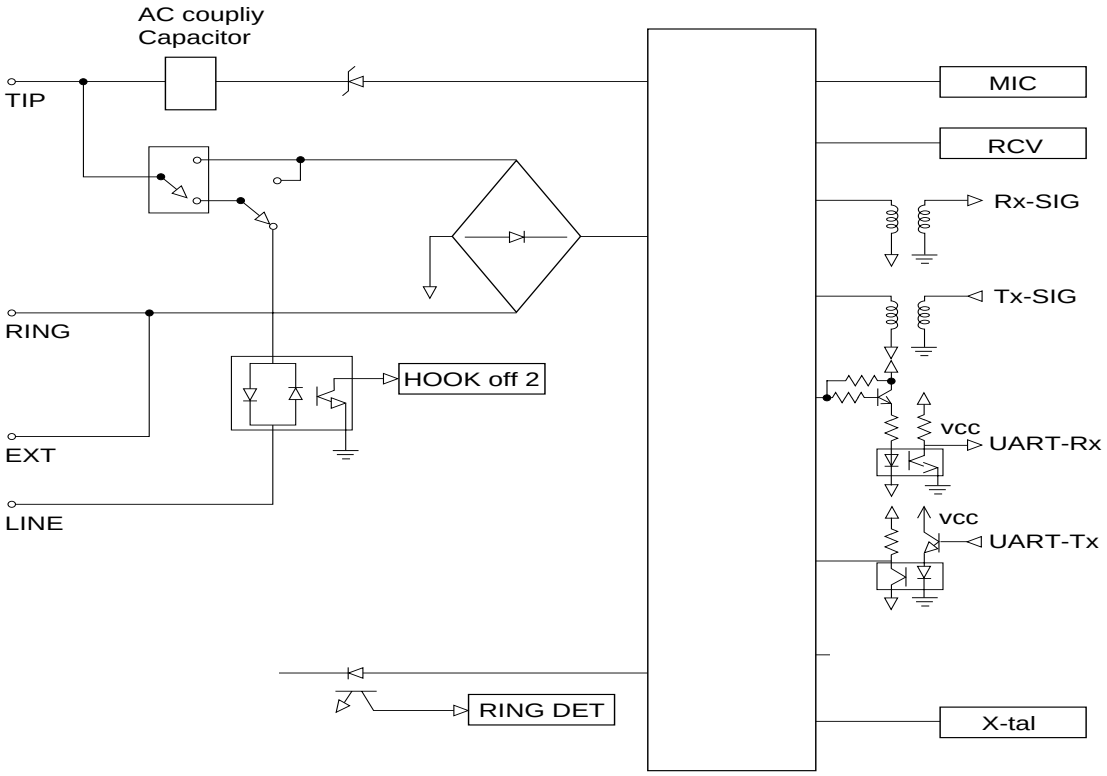


Figure 5-4 LIU Function Diagram

5-8-1 Modem AFE and Interface

TIT (Transformer Input from Transformer) : The signal is applied to LIU input of the modem.
ROT (Receive Output to Transformer) : The signal from line is applied to modem.

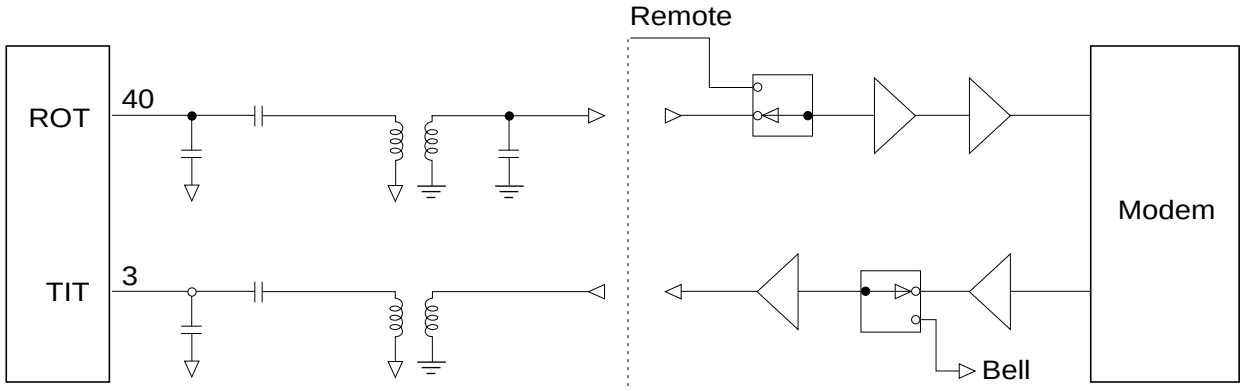


Figure 5-5 Modem AFE and Interface

5-8-2 UART Rx, Tx

TxD (Transmit Data Output) : This data signal is transferred to CPU through ILIU chip.
RxD (Receive Data Input) : This data signal is transferred to ILIU from CPU.

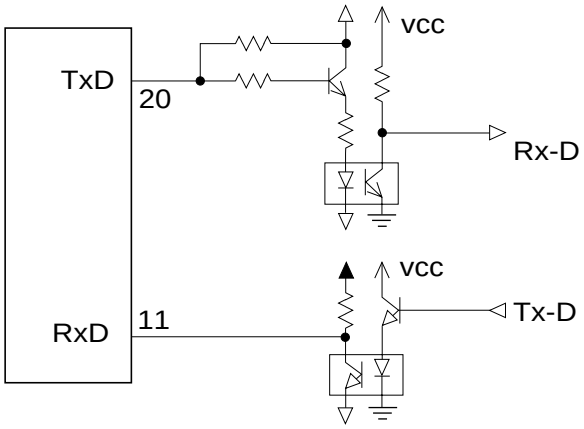


Figure 5-6 UART Tx, Rx

5-8-3 Off-Hook Detect

*EHS (Electronic Hook Switch) : This signal comes to ILIU chip when CML relay turns on and applies to CPU through UART Rx.
*MHS (Manual Hook Switch) : This signal comes to ILIU chip through hook switch when the handset is off-hooked and applies to CPU through UART Rx.

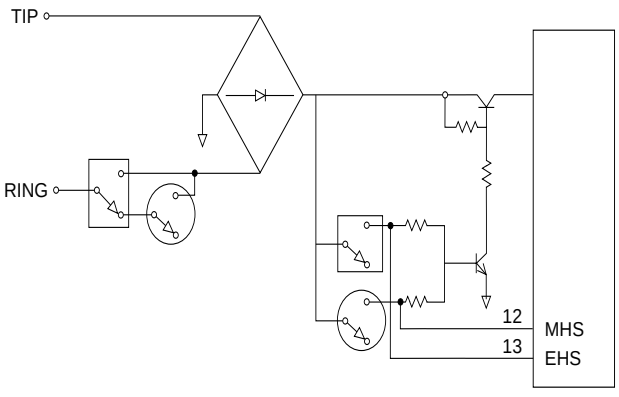


Figure 5-8 Off-Hook Detect

5-8-4 Ring Detect

When ring signal is applied from line, this circuit adjusts ring impedance through C19 and R26, and eliminates the ring signal less than 18 V through ZD2. The ring signal is outputted to RFO port. ILIU chip counters the ring frequency and sends out the ring melody through MO. It drives the piezzo buzzer. The ring melody output is transferred to CPU through photo coupler (U5).

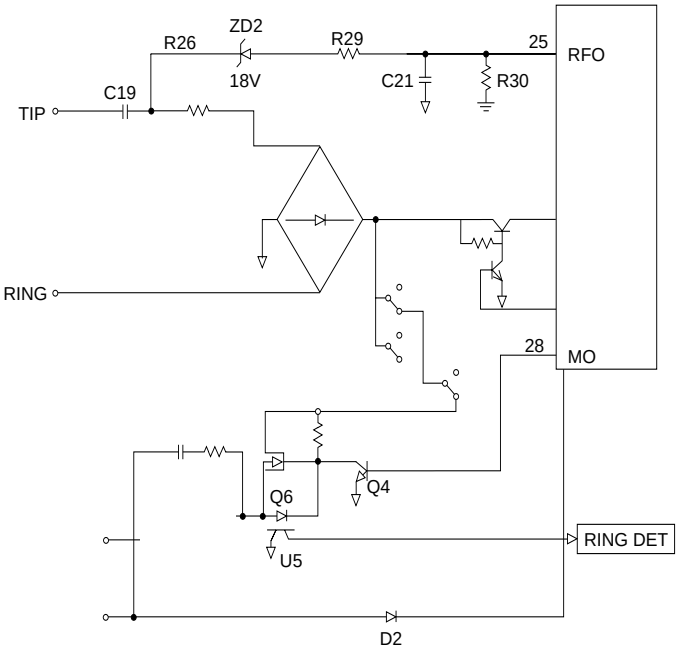


Figure 5-7 Ring Detect

5-8-5 MF/DP Dialing

DP dialing is activated by receiving digital data from CPU through UART Tx. The signal turns on and off Q2 through ILIU chip and DPN. It causes Q1 to be on and off to generate the dial pulse.

MF dialing is activated by receiving digital data from CPU through UART Tx. ILIU chip adjusts DTMF frequency and level through RFO and RFI and sends out the DTMF signal.

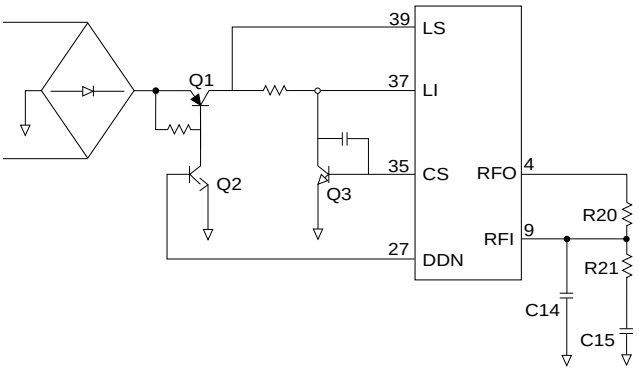


Figure 5-9 MF/DP Dialing

5-8-6 Remote Receive

This circuit switches the machine to automatic receive mode when it detects *2* key input from the phone extension.

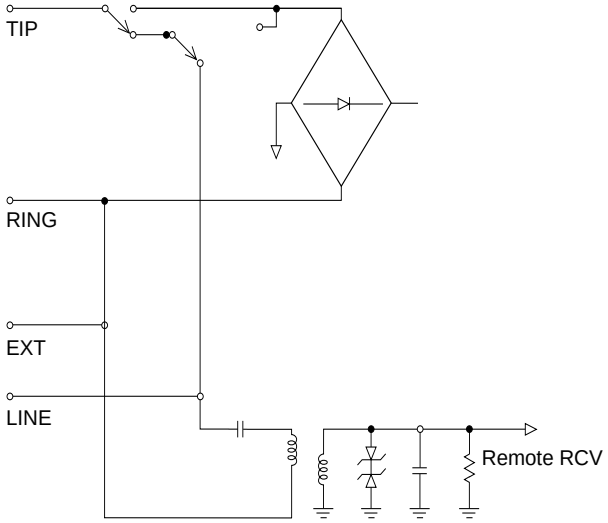


Figure 5-10 Remote Receive

5-9 SMPS

This Switching Mode Power Supply (SMPS) rectifies AC85~135V (57~63Hz) and supplies +5V, +12V, -12V, +24V DC voltages to the circuits in the machine.

This SMPS circuit is divided as follows:
- Input stage : This stage consists of AC input, line filter, bridge rectifier.
- Converter stage : This stage consists of start up, snubber circuit, voltage control, drive circuit.
- Output stage : Output smoothing circuit.
- Voltage detector circuit : This circuit detects the output voltage and feeds it back to the converter stage.
- Lamp voltage control circuit.

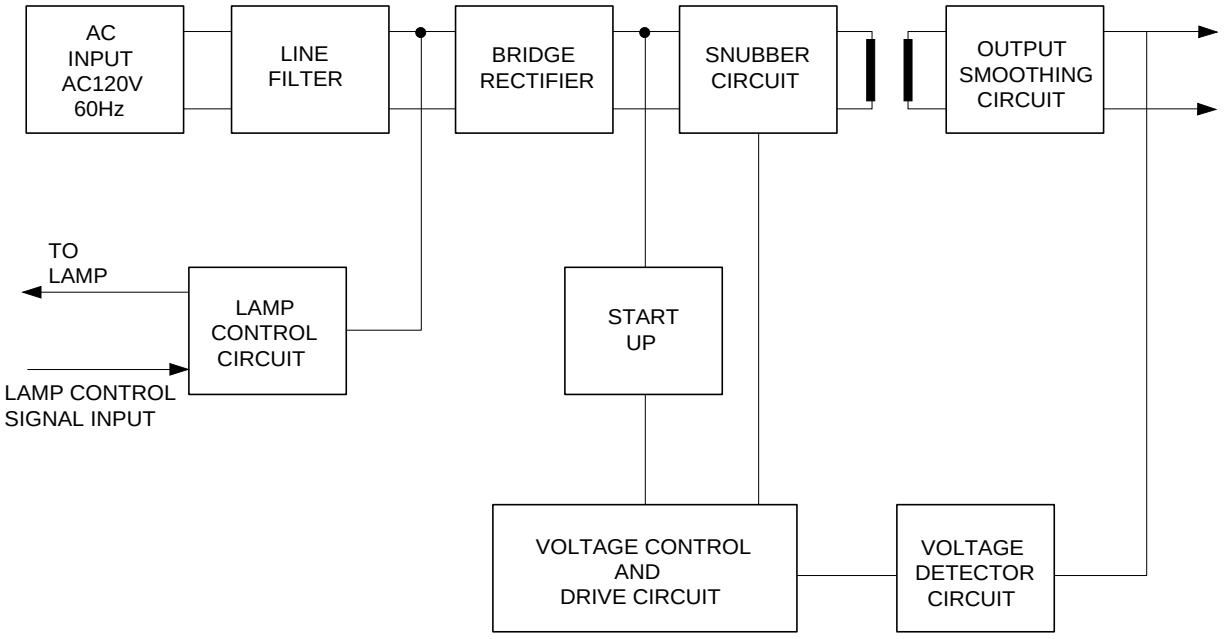


Figure 5-11 SMPS Block Diagram

5-10 Second Cassette Feeder (Option)

This circuit contains:
-motor driver consisted of motor drive IC(UDN2916B), MC14040 binary counter, and peripheral filp-flop;
-paper empty sensor;
-paper feeding clutch controller; and
-interface signal controller.

The 480 kHz resonator generates 373 pps motor phase using the binary counter to drive the motor.

SCF I/O Control Signal

Pin no.	Pin name	Description	Status
CN1-2	SCF_SEL	SCF select	L: SCF
CN1-3	SCFMTRSTRT	SCF motor start	L: start
CN1-4	SCFCLTCH	SCF clutch control	H: paper feed
CN1-5	SCFPEMPT	SCF paper empty	L: no paper

6. Disassembly and Reassembly

6-1 General Precautions on Disassembly

When you disassemble and reassemble components, you must use extreme caution. The close proximity of cables to moving parts makes proper routing a must. If components are removed or replaced, any cables disturbed by the procedure must be restored as close as possible to their original positions. Before removing any component from the machine, note the cable routing that will be affected.

Whenever servicing the machine, you must perform as follows:

1. Check to verify that no documents are stored in memory. You can check it by printing the Delayed Dial List. Press **MENU**, one-touch 17 'DELAYED DIAL', **ENTER** sequentially.
2. Remove the paper cassette, trays, and toner cartridge.
3. Unplug the power cord.
4. Use a flat and clean surface.
5. Replace with only an authorized component.
6. Do not force to open or fasten a plastic-material component.
7. Be careful no obstacles are included when you reassemble components.
8. When you assemble components, be careful small-sized components are located in place.

6-2 Scan Unit

1. Open the control panel by hand, remove the two screws **A**. Remove the TX piece. Then remove three screws **B**.

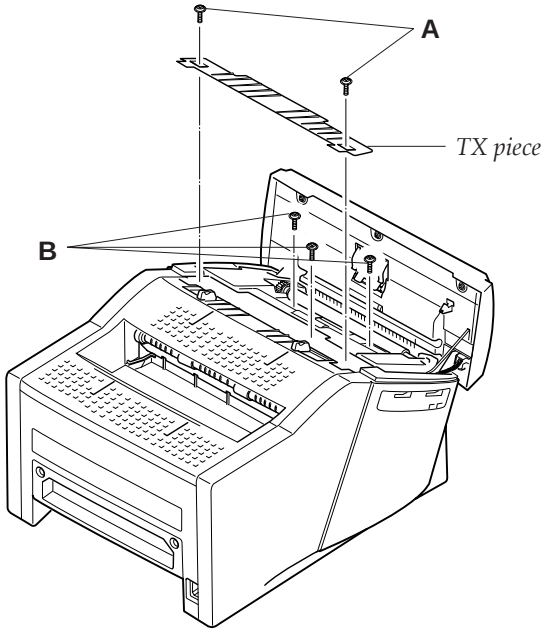


Figure 6.1

2. Close the Control panel, and take out the Scan unit. Unplug the connector from the Scan PBA.

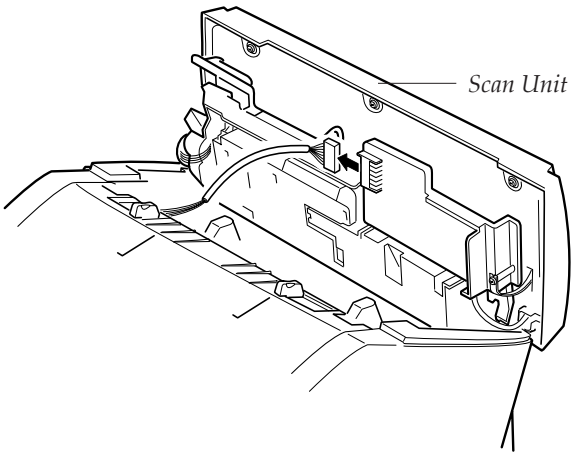


Figure 6.2

6-3 White Roller Assembly

1. Open the control panel by hand.

2. Push the bushing at both ends of the roller slightly inward, then rotate it in the direction of (A) until it reaches the slot as shown in the figure below. Then take out the roller in the direction of (B).

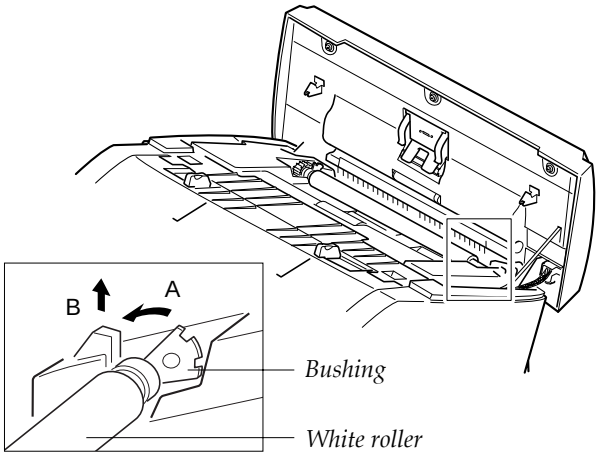


Figure 6.3

Note: Check the roller for any stain. If stained, wipe it off with soft cloth dampened with alcohol. If the roller is heavily worn, replace it with a new one.

6-4 ADF Rubber Pad

1. Open the control panel by hand.

2. Insert a flat blade screw driver into the slot and force to remove the rubber as shown in the figure below.

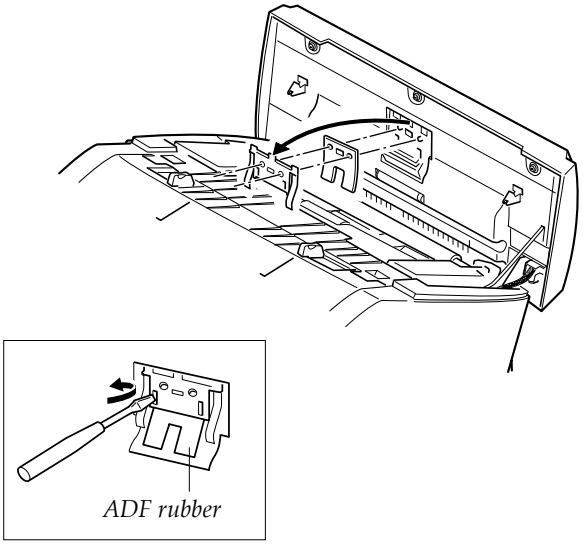


Figure 6.4

Notes: When you reassemble the pad, be sure that the rubber pad and holder fit into the guide boss and the holder tabs fit into the corresponding hole. Then push them firmly until it clicks.

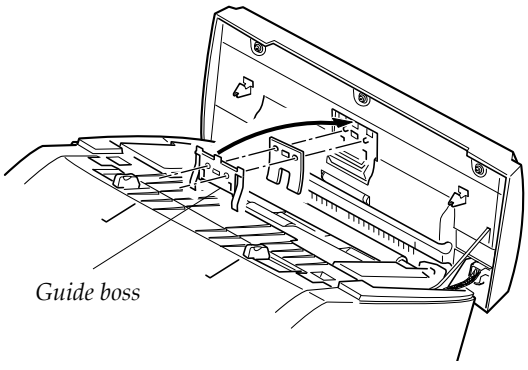


Figure 6.5

- Clean the surface of the rubber pad with ethyl alcohol. After wiping it, be sure to dry completely with a soft cloth. Check the rubber wear. If the wear reaches 1/2 its original thickness, replace it with a new one.

6-5 OPE Unit

1. Before you disassemble the OPE unit, you should remove :
   • Scan unit (See page 6-1)

2. Turn the scan unit over. Place the unit on soft cloth to avoid the accidental scratch on the surface of the unit.

3. Unplug the OPE connector from the scan PBA and remove the one earth screw.

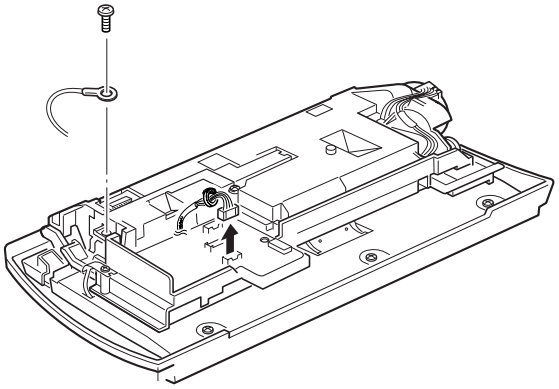


Figure 6.6

4. Open the OPE cover. Twist the tie stopper until it is released. The OPE unit has secured by the tabs on the bottom end to the Scan unit as shown. Pull the tabs outwards so that the OPE unit is separated from the Scan unit.

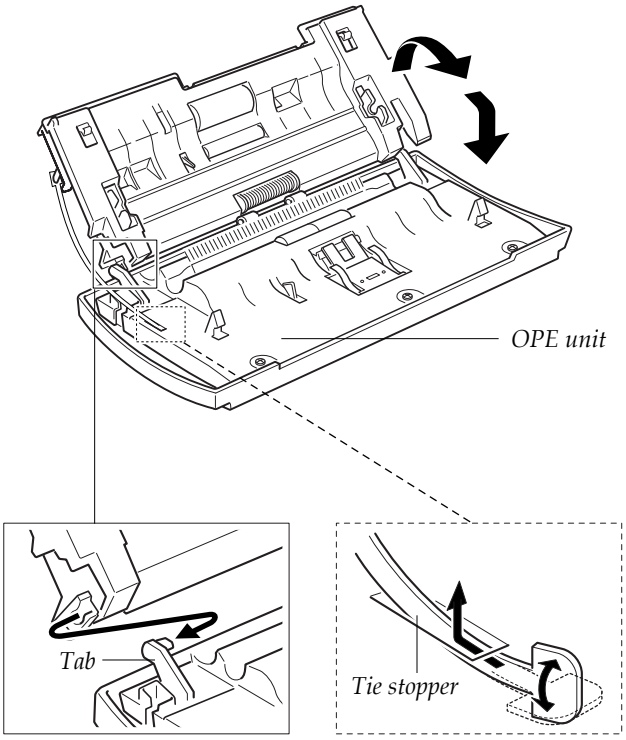


Figure 6.7

6-6 CIS

1. Before you disassemble the CIS, you should remove :
   - ♦ Scan unit (See page 6-1)
   - ♦ White roller (See page 6-2)
   - ♦ OPE unit (See page 6-3)

2. Remove the two screws securing the Scan paper guide and take out the paper guide.

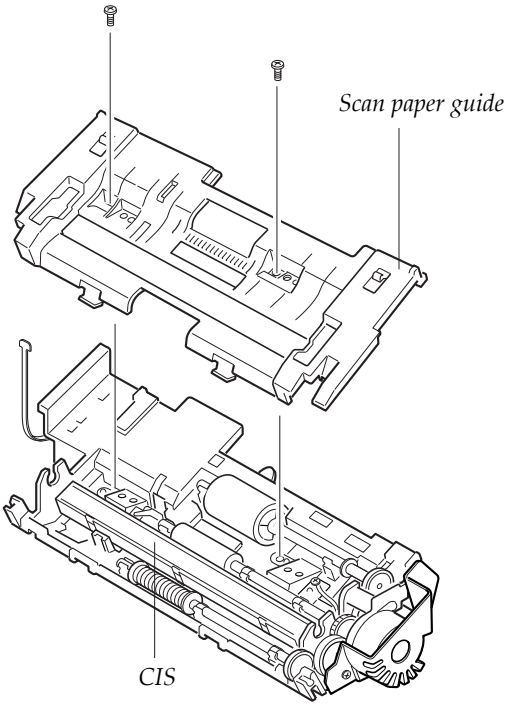


Figure 6.8

3. Remove the one special screw securing the CIS.

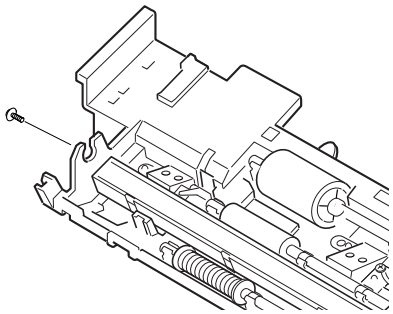


Figure 6.9

4. Unplug one connector from the CIS. Pull up the left end of the CIS, then take out the CIS in the direction of B.

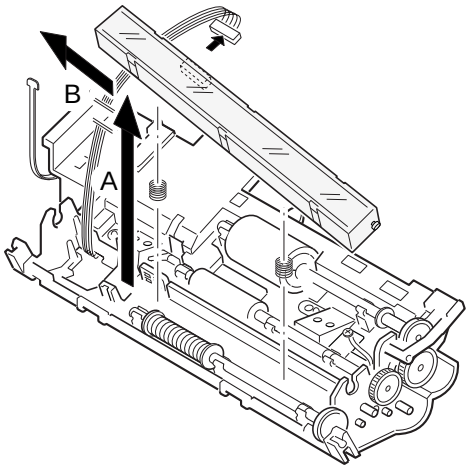


Figure 6.10

Notes:

- After you replace the CIS, you must perform the Make shading procedure. For details, see page 7.3.
- Check the glass surface of the CIS for any stain or scratch. If stained, wipe off with ethyl alcohol. If it is heavily stained or scratched, replace it with a new one.
- When you assemble the scan paper guide, make sure the tabs in the guide fit in place.

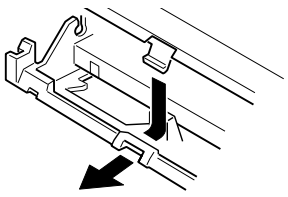


Figure 6.11

6-7 Rollers (ADF, Feed, D.Exit)

1. Before you disassemble the roller, you should remove :
   - ♦ Scan unit (See page 6-1)
   - ♦ White roller (See page 6-2)
   - ♦ OPE unit (See page 6-3)

2. Remove the two screws securing the scan paper guide and take out the Scan paper guide.

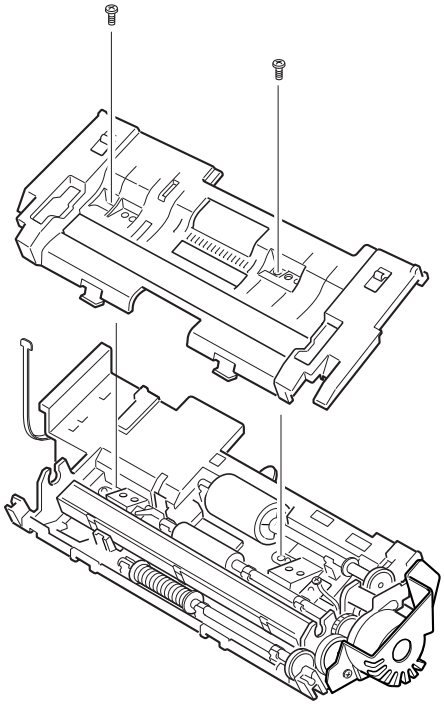


Figure 6.8

3. Take out the rollers from the Scan unit.

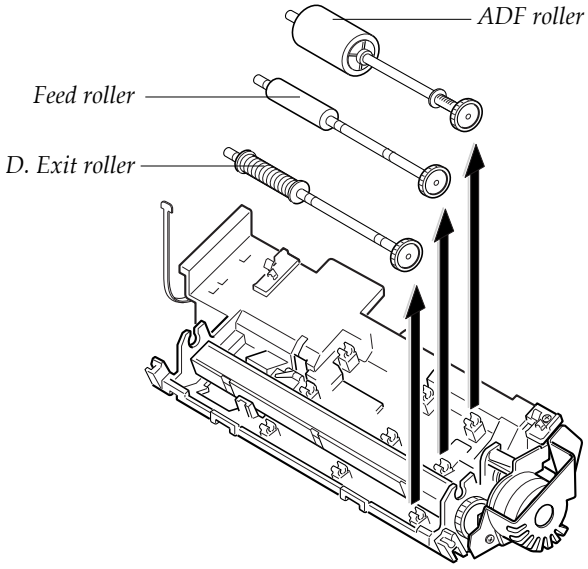


Figure 6.12

Note: Clean the surface of the rollers with ethyl alcohol. After wiping them, be sure to dry completely with a soft cloth.

6-8 Scan Motor

1. Before you disassemble the Scan motor, you should remove :
   - ♦ Scan unit (See page 6-1)
   - ♦ White roller (See page 6-2)
   - ♦ OPE unit (See page 6-3)

2. Turn the scan unit over and unplug the motor connector from the Scan PBA.

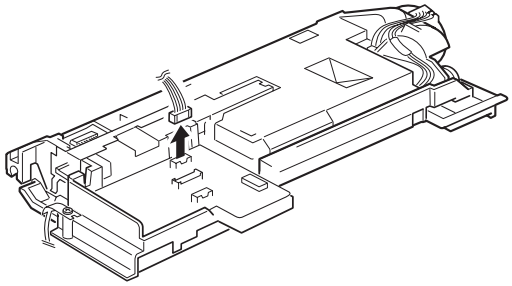


Figure 6.13

3. Turn the Scan unit back. Remove the two screws securing the Scan paper guide, and take out the scan paper guide.

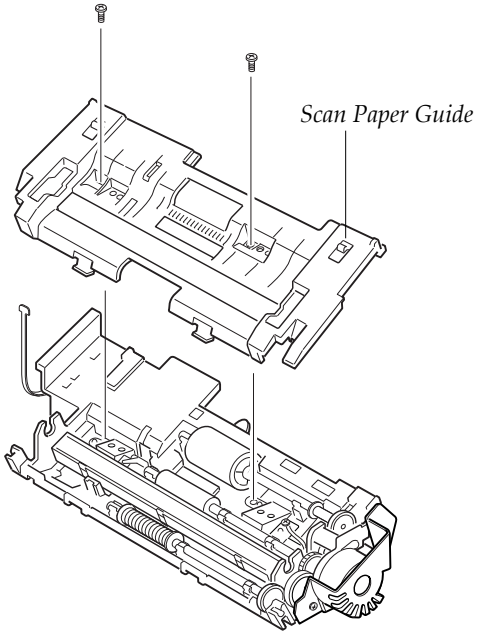


Figure 6.8

4. Remove the two screws securing motor cover and take out the motor cover.

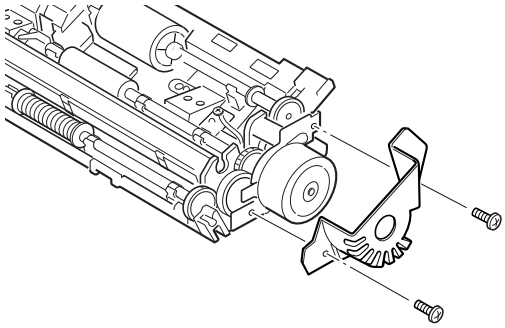


Figure 6.14

5. Remove the two screws securing the motor to the Scan unit, and take out the motor ass'y.

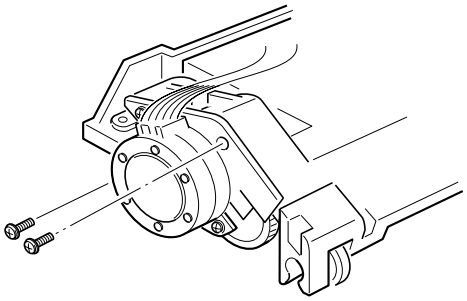


Figure 6.15

6. Remove the two screws securing the motor to the motor bracket.

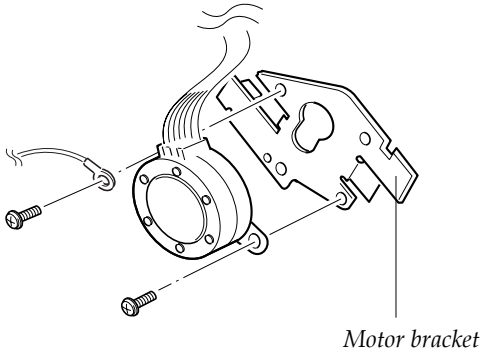


Figure 6.16

6-9 Roll Pinch

1. Before you disassemble the Roll pinch, you should remove :
   - ♦ Scan unit (See page 6-1)
   - ♦ OPE unit (See page 6-3)

2. Remove the five screws from the OPE unit.

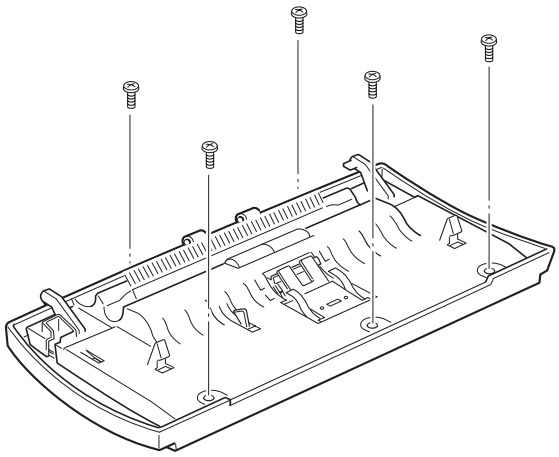


Figure 6.17

3. Turn the scan upper frame of the OPE unit over.

4. Remove the three screws and take out the spring pinch. The roll pinch is separated.

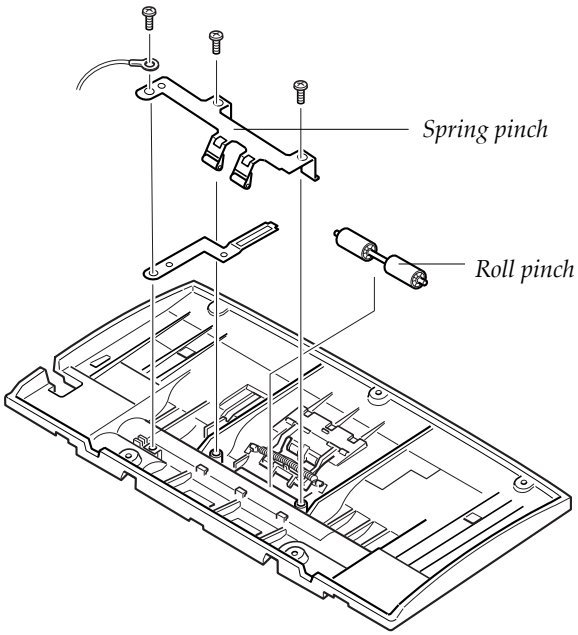


Figure 6.18

6-10 Scan PBA

1. Before you disassemble the Scan PBA, you should remove :
   - ♦ Scan unit (See page 6-1)

2. Turn the Scan unit over and unplug all connectors from the scan PBA.

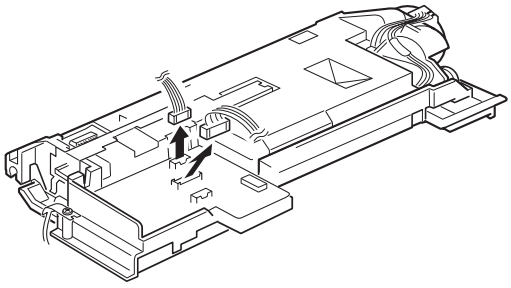


Figure 6.19

3. Remove the one screw securing the Scan PBA and take out the PBA.

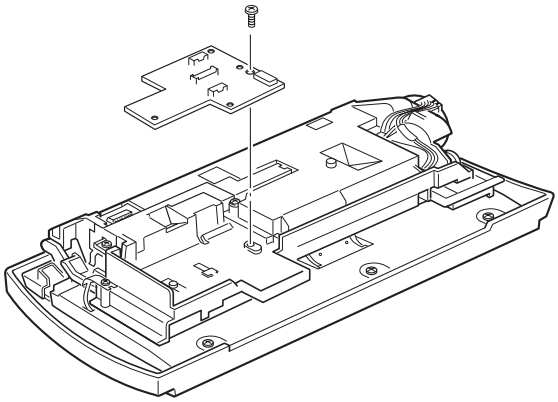


Figure 6.20

6-11 OPE PBA

1. Before you disassemble the OPE PBA, you should remove :
   - ♦ Scan unit (See page 6-1)
   - ♦ OPE unit (See page 6-3)

2. Remove the five screws from the OPE unit to separate the scan upper frame as shown.

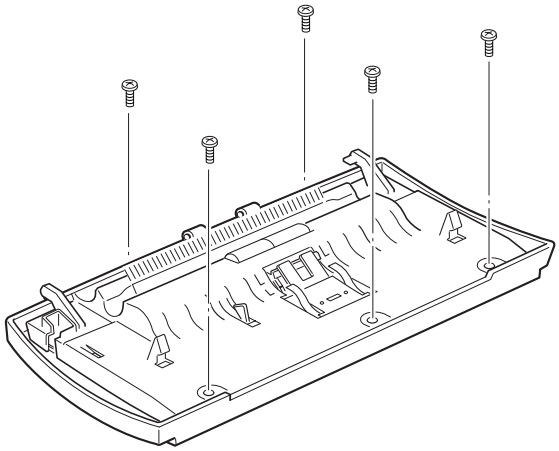


Figure 6.21

3. Remove the twelve screws as shown and take out the PBA and the LCD.

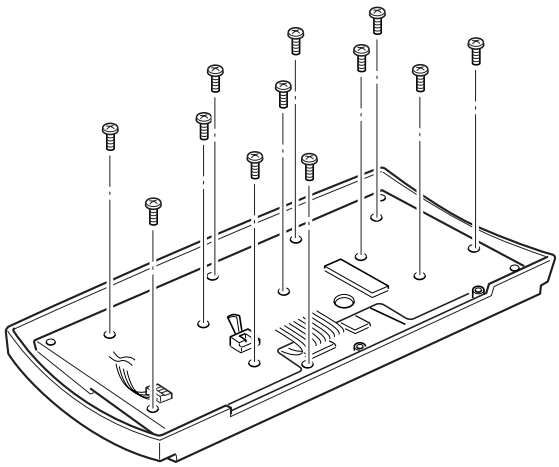


Figure 6.22

4. Move the PBA in the direction of arrow; then remove the one screw.

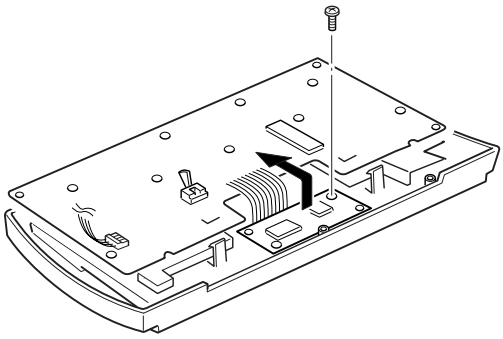


Figure 6.23

Notes:

- After you remove the screws securing the PBA, turn the PBA side up and remove the rubber contact carefully if it is still attached into the PBA. Be careful. Keys and rubber contacts may be separated and you might loss any of them.
- When you assemble the OPE unit, make sure the keys are in correct position so as not to make improper contacts.
- When you reassemble the PBA, secure the screws according in the order of the number printed in the PBA.
- After reassembling, operate the machine to make sure it works properly.
- After reassembling, make sure there is no foreign material in the LCD.

6-12 Toner Lever

1. Open the Operation unit assembly by pressing the release button on the left side of the machine.

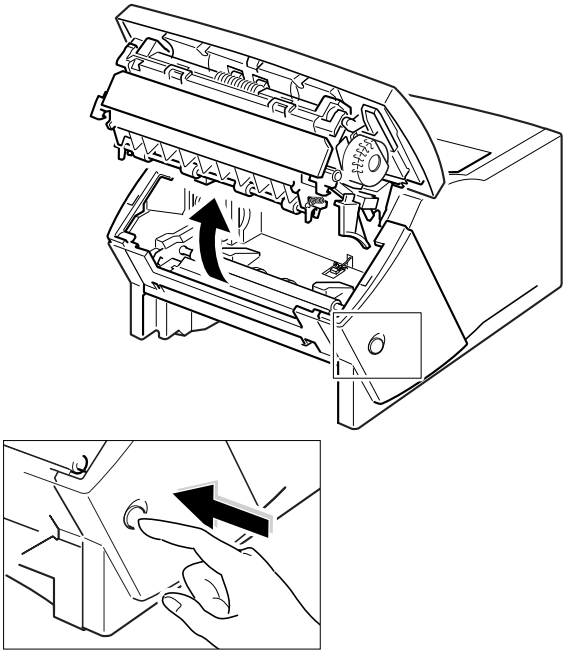
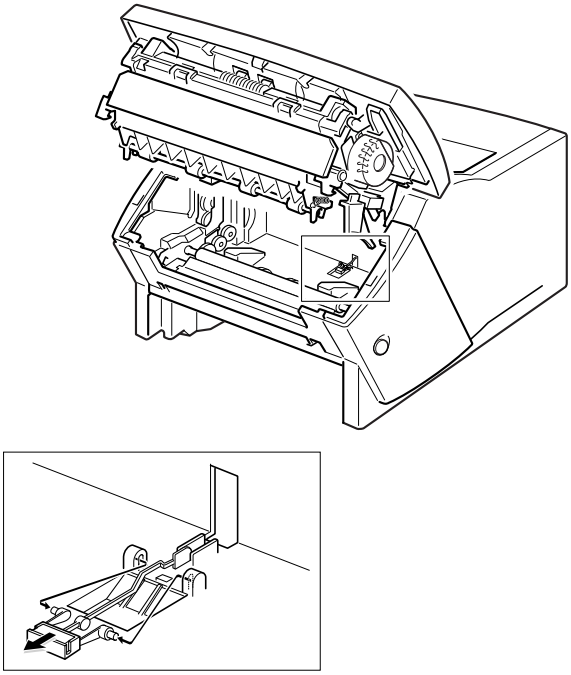


Figure 6.24

2. Remove the Toner lever inserted into the main frame by squeezing both sides of the lever and pulling it out.



Toner Lever

Figure 6.25

6-13 Side Covers (Left/Right)

1. Open the Control panel by hand.

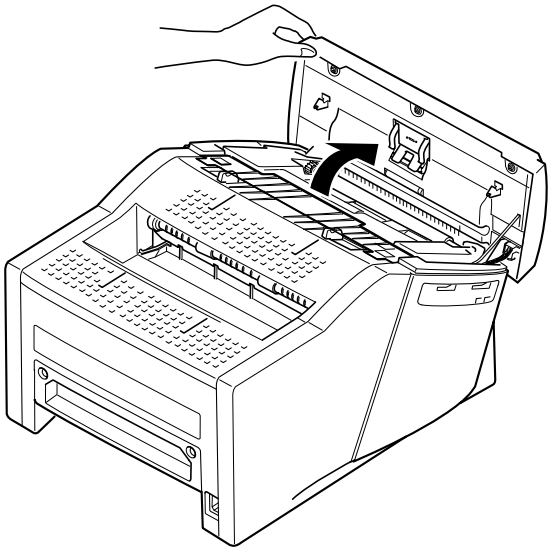


Figure 6.26

2. Remove the five screws , and take out the TX piece.

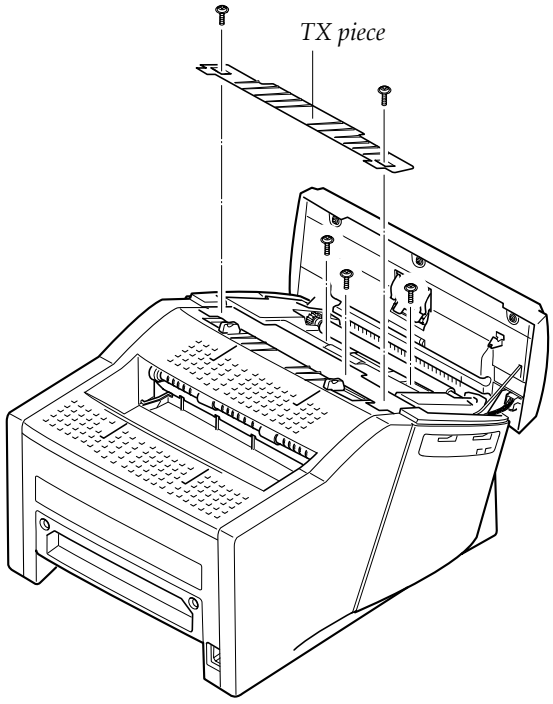


Figure 6.27

3. Close the Control panel and take out the Scan unit. Then unplug the connector from the Scan board.

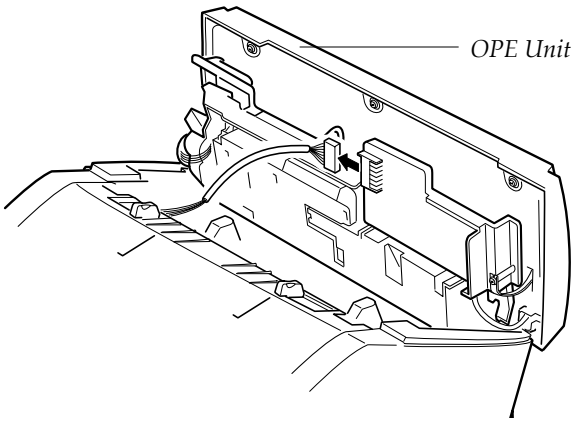


Figure 6.28

4. Remove the two screws from the colored bar. Then remove the four screws from each Side cover.

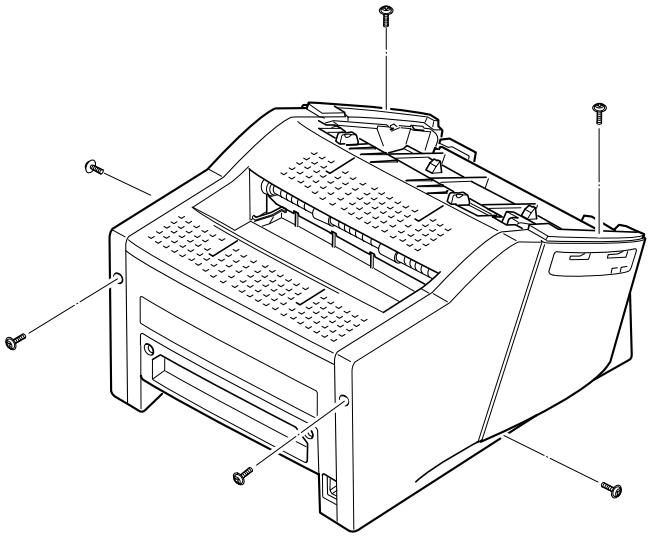


Figure 6.29

5. Turn the machine 90 degrees backwards to set the back side up and release the L-shaped tab on the bottom of the Side cover latched into the main frame. Then take out each side cover.

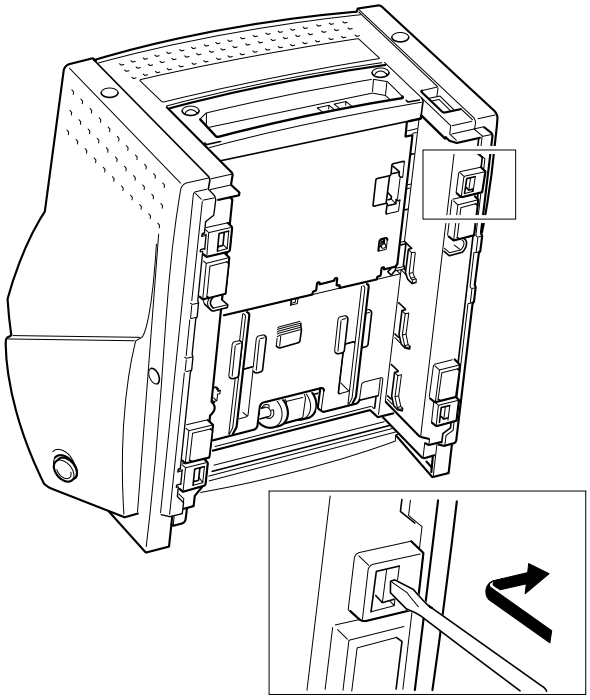


Figure 6.30

Note: When you reassemble the Side covers, you should first hook the L-shaped tabs into their places and push the top side of the cover firmly.

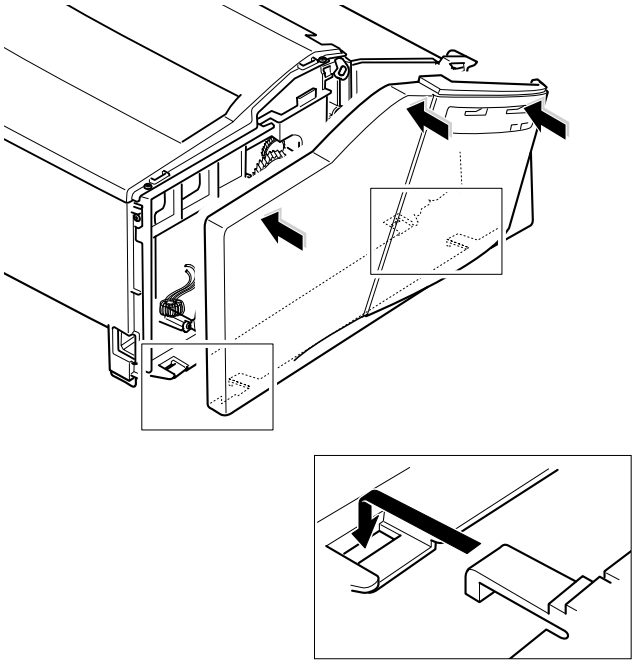


Figure 6.31

6-14 Top Cover

1. Before you disassemble the Top cover, you should remove :
   - ♦ Side covers (See page 6-10)

2. Remove the four screws from the Top cover and take out the cover.

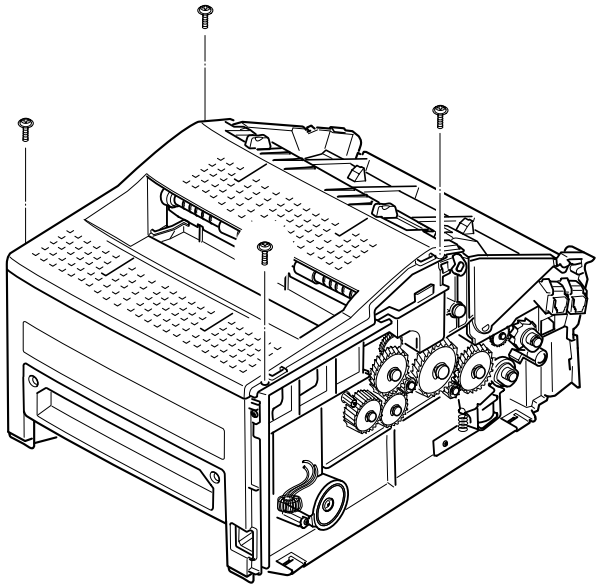


Figure 6.32

6-15 Rear Cover

1. Before you disassemble the Rear cover, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Remove the two screws from the Rear cover. And release the tabs latched into the main frame and take out the Rear cover.

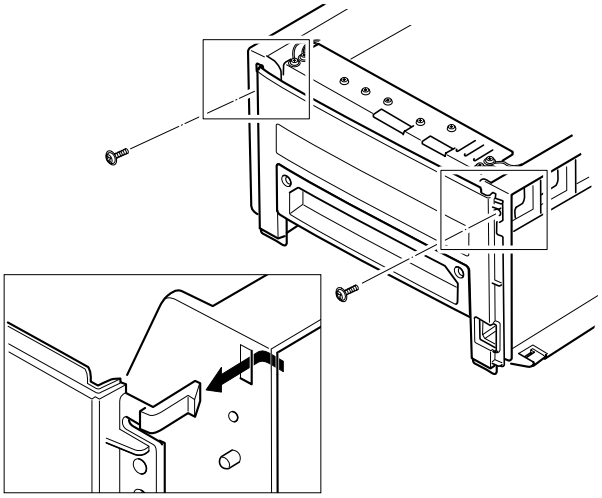


Figure 6.33

Note: When you reassemble the Rear cover, hook the tabs located on the lower end in place, and then push the top side, so that the tabs on the upper end are fitted in place.

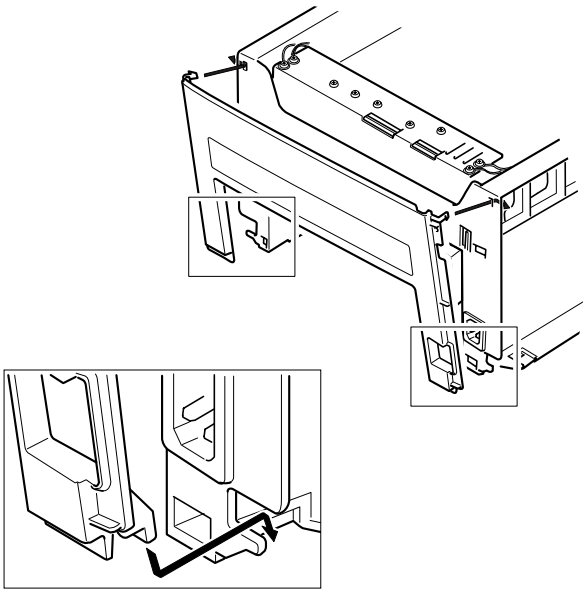


Figure 6.34

6-16 Speaker

1. Before you disassemble the Speaker, you should remove :
   - ♦ Left side cover (See page 6-10)

2. Remove the two screws securing the Speaker to the main frame and unplug the speaker connector. Then take out the Speaker.

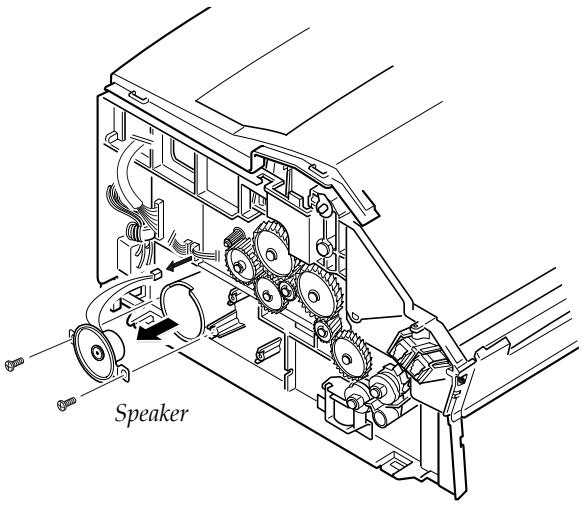


Figure 6.35

6-17 Solenoid

1. Before you disassemble the Speaker, you should remove :
   ♦ Left side cover (See page 6-10)

2. Remove the two screws securing the Solenoid to the main frame and unplug the connector from the Mech board. Then take out the Solenoid.

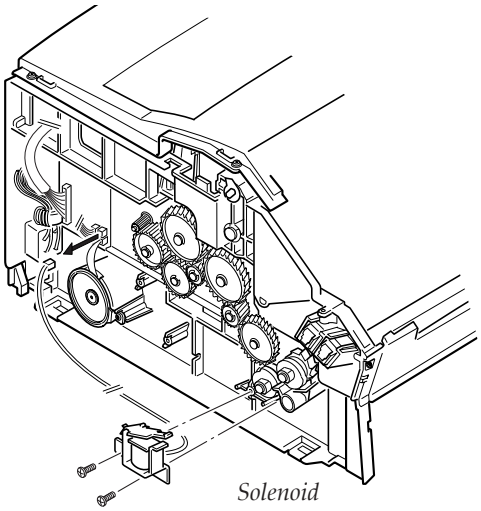


Figure 6.36

6-18 Latch Clutch

1. Before you disassemble the Latch clutch, you should remove :
   ♦ Left side cover (See page 6-10)

2. Remove the one screw securing the clutch and take out the clutch and its spring.

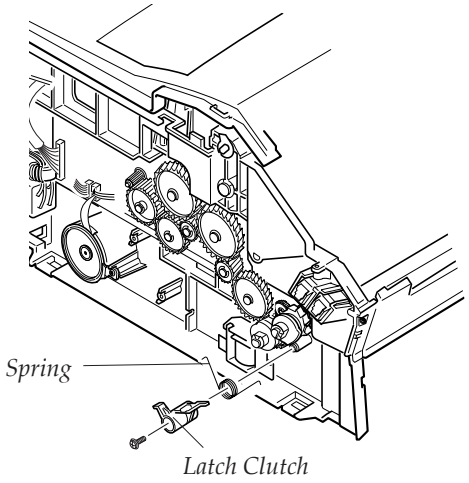


Figure 6.37

Note: When you reassemble the Latch clutch, you should set the spring into the clutch as shown below; then replace the clutch.

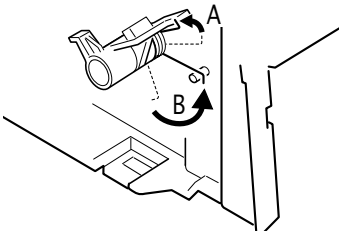


Figure 6.38

6-19 Feed Clutch

1. Before you disassemble the Feed clutch, you should remove :
   - ♦ Left side cover (See page 6-10)
   - ♦ Latch clutch (See page 6-13)

2. Remove the E-ring and take out the clutch.

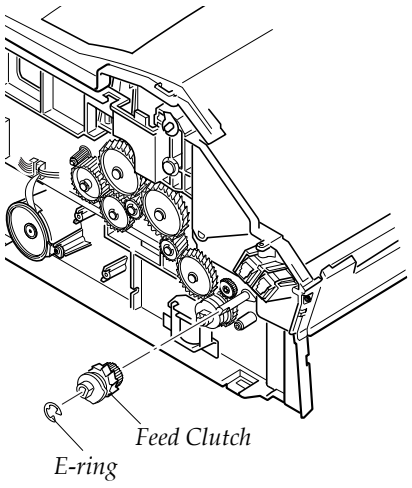


Figure 6.39

6-20 Pickup Clutch

1. Before you disassemble the Pickup clutch, you should remove :
   - ♦ Left side cover (See page 6-10)
   - ♦ Latch clutch (See page 6-13
   - ♦ Gear Z52/25 (See page 6-14)
   - ♦ Solenoid (See page 6-13)

2. Remove the E-ring and take out the clutch.

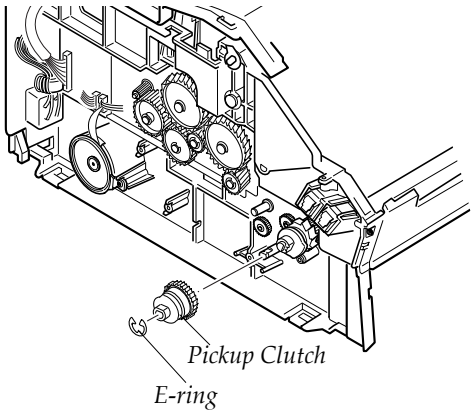


Figure 6.40

6-21 Gear Z52/25, Gear Z27

1. Before you disassemble the Gear, you should remove :
   - ♦ Left side cover (See page 6-10)

2. Remove the E-ring from the Gear Z52/25. Then take out the Gear Z52/25.

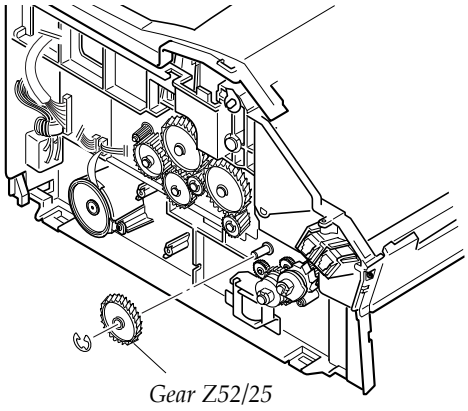


Figure 6.41

3. Take out the Gear Z27 located under the Gear Z52/25.

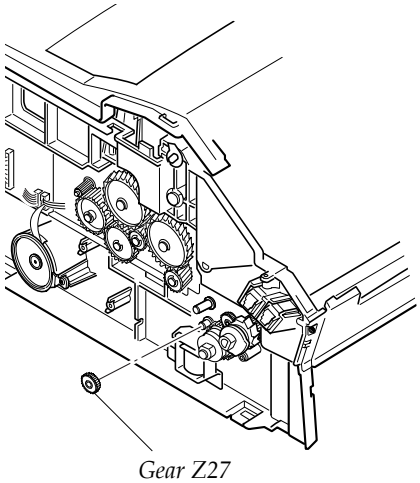


Figure 6.42

Note: You should remove the Latch clutch and Feed clutch to take out the Gear Z27 located next to the Feed clutch. For details on how to remove the Feed clutch, see the figure 6.42 on page 6-13.

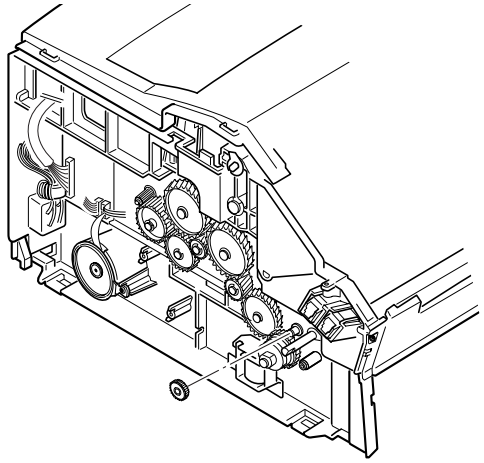


Figure 6.43

6-22 Mech Board

1. Before you disassemble the Mech board, you should remove :
   - ♦ Left side cover (See page 6-10)

2. Unplug the connector and remove the two screws from the Mech board. Then take out the board.

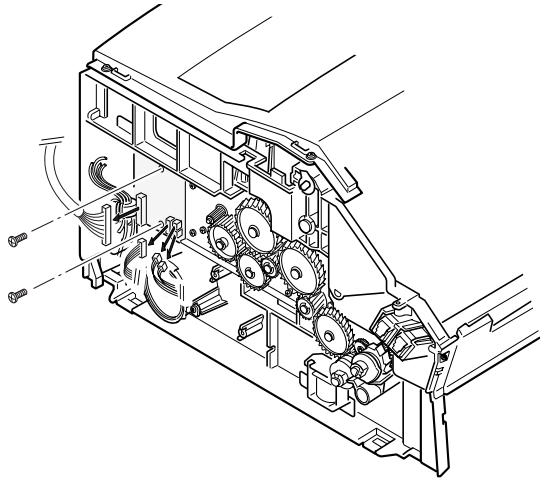


Figure 6.44

6-23 Driver

1. Before you disassemble the Driver, you should remove :
   - ♦ Left side cover (See page 6-10)
   - ♦ Gear Z52/25 (See page 6-14)

2. Remove the six screws securing the Driver to the main frame and unplug the connector from the Mech board. Then take out the Driver.

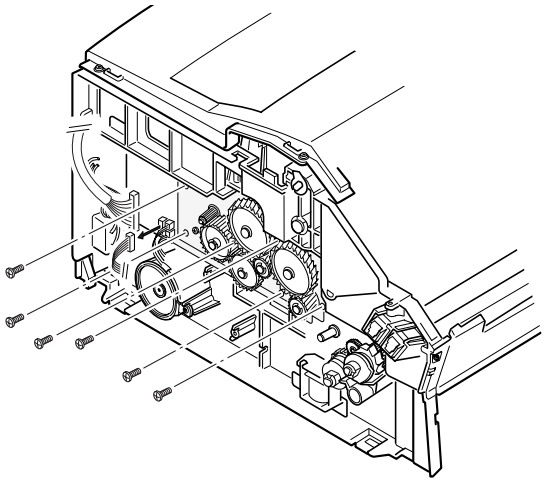


Figure 6.45

6-24 HVPS Board

1. Before you disassemble the HVPS board, you should remove :
   ♦ Right side cover (See page 6-10)

2. Unplug all the connectors and remove the four screws from the HVPS board.

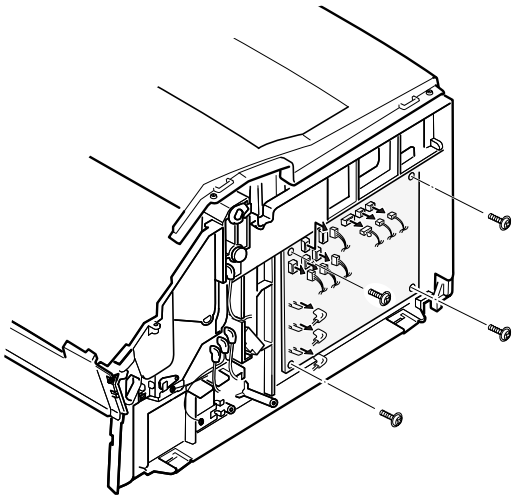


Figure 6.46

3. Take out the board. Be careful when you unplug the scan connector (H13) from the Mother board.

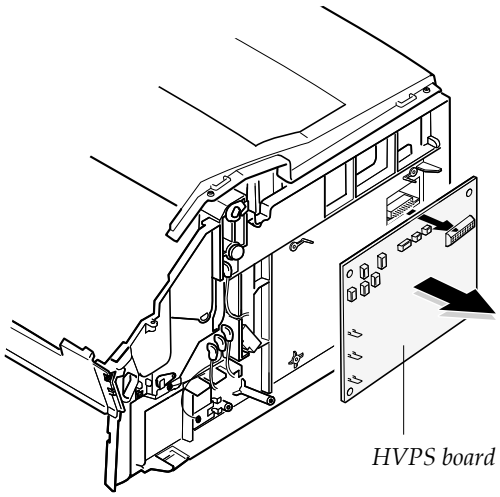


Figure 6.47

6-25 Paper Empty Sensor

1. Before you disassemble the sensor, you should remove :
   ♦ Right side cover (See page 6-10)

2. Unplug the connector (H8) from the HVPS board and release the connector wire by removing the cover switch that ties the wires in a bundle.

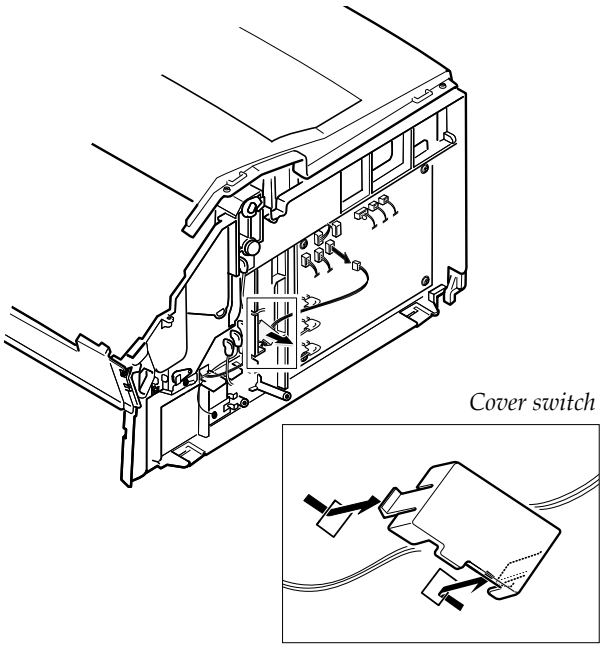


Figure 6.48

3. Press the release switch located on the right side.

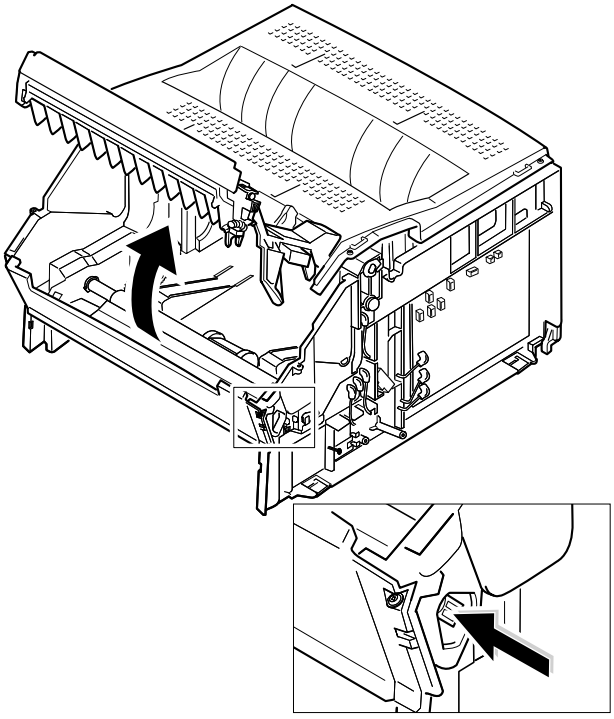


Figure 6.49

4. Take out the Sheet sensor. Put a flat blade screw driver or something under the sensor through the hole on the right side of the machine and push it up.

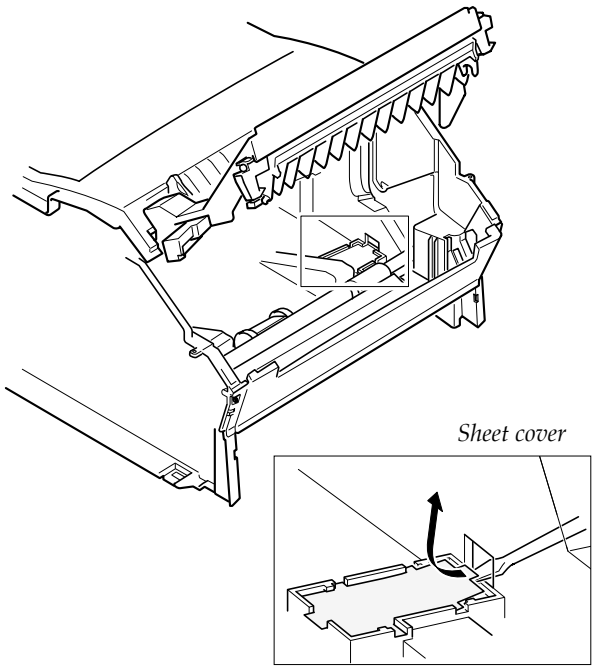


Figure 6.50

5. Push up the bottom of the Paper empty sensor and take it out.

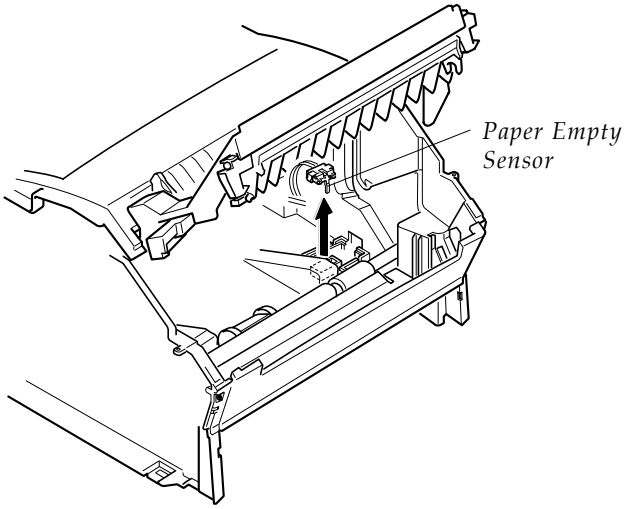


Figure 6.51

Note: When you reassemble the Sheet cover, insert one end of the sensor in place and push until you hear a click, then push the other end.

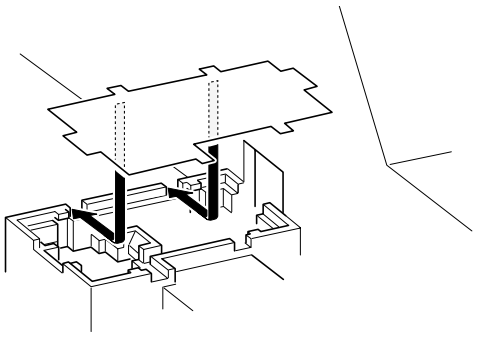


Figure 6.52

6-26 SMPS

1. Before you disassemble the SMPS, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Remove the screw **A** securing the main board. Remove the four screws **B** securing the ground wires to the SMPS.

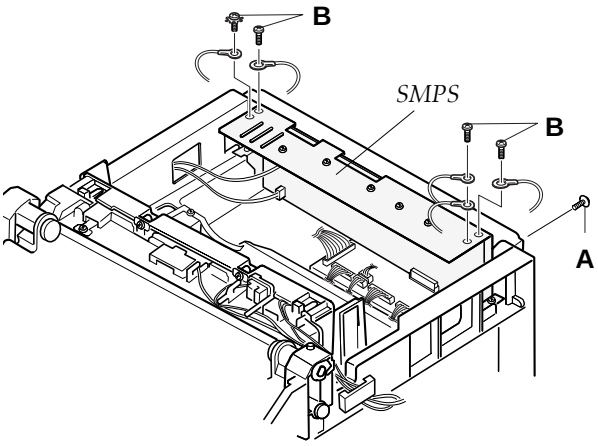


Figure 6.53

3. Remove the two screws securing the SMPS to the main frame.

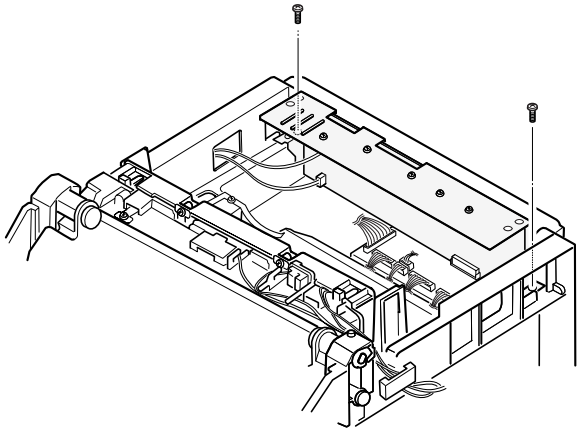


Figure 6.54

4. Take out the SMPS and unplug the two connectors from the SMPS board. You should unplug the connector (CON1) while you push the lever of the connector.

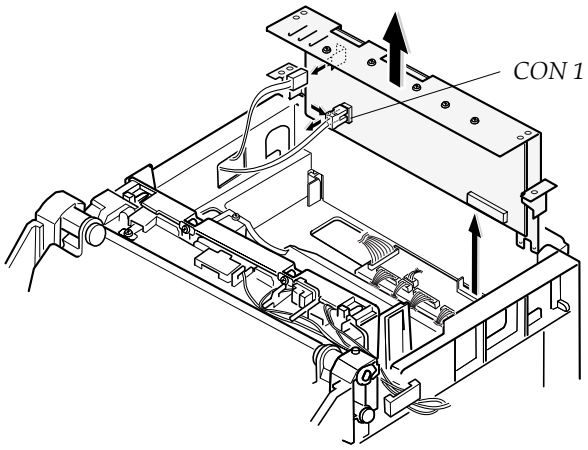


Figure 6.55

Note: When you reassemble the SMPS, make sure that the bottom of the SMPS is fitted into the groove on the main frame and lower the SMPS along the groove until the pin connector on the SMPS board clicks into the connector on the Mother board.

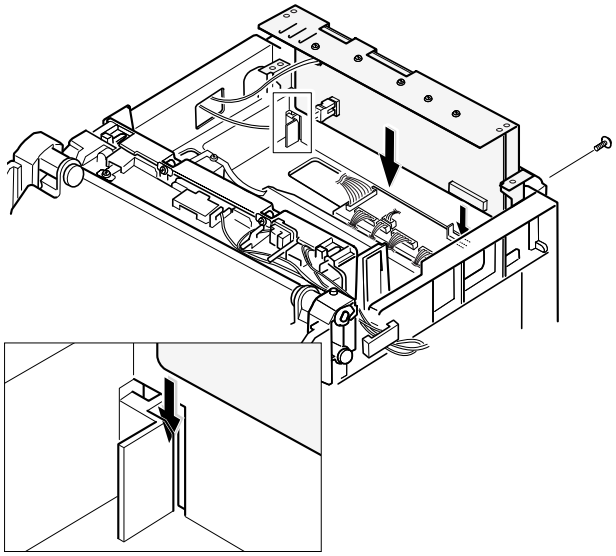


Figure 6.56

6-27 Power Inlet

1. Before you disassemble the Power inlet, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Rear cover (See page 6-12)

2. Remove the one screw from the SMPS. Unplug the connector (CON1) from the SMPS board while you push the lever of the connector.

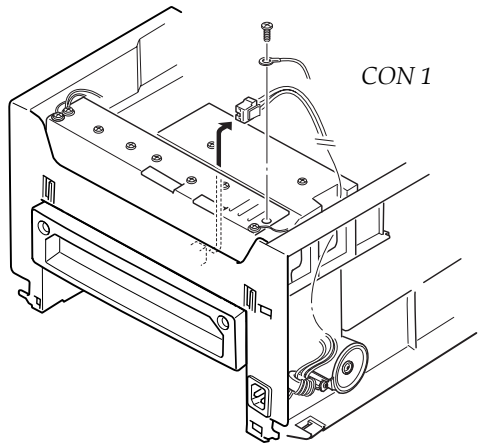


Figure 6.57

3. While you holdboth ends of the Power inlet, push it out.

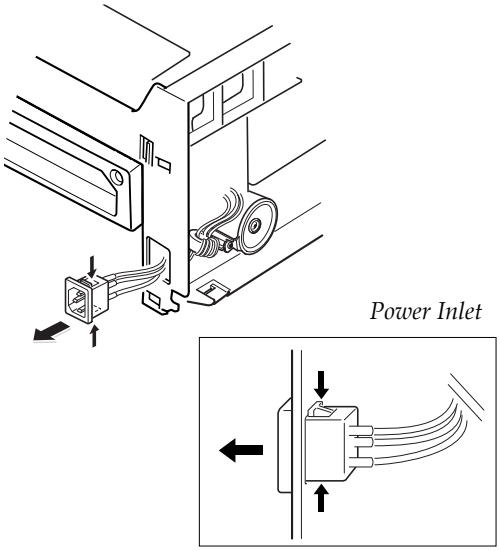


Figure 6.58

6-28 Mother Board

1. Before you disassemble the Mother board, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ SMPS (See page 6-18)

2. Unplug all the connectors and remove the two screws from the Mother board.

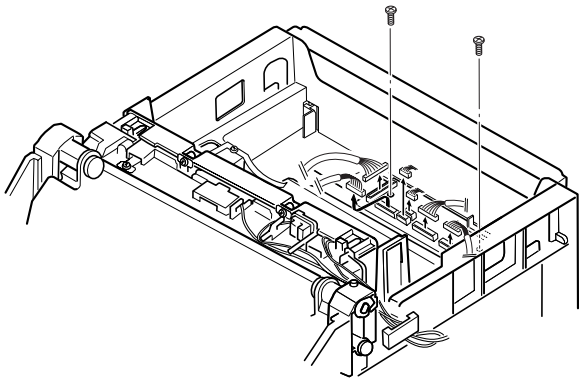


Figure 6.59

3. Pull out the board in the arrow direction so that the connector (CN8) is unplugged from the connector on the HVPS board. Then take out the Mother board.

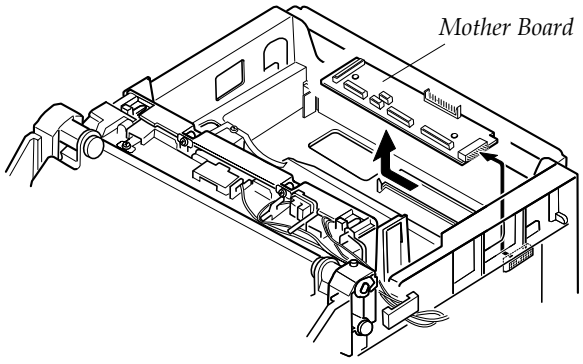
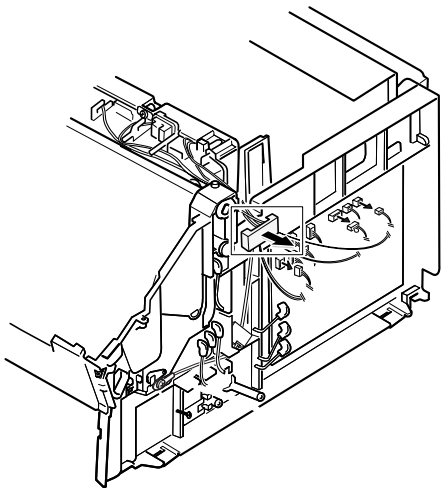


Figure 6.60

6-29 Fuser

1. Before you disassemble the Fuser, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Unplug the three connectors (H4, H5, H7) from the HVPS board. Release the connector wires by removing the cover switch that ties the wires in a bundle.



Cover switch

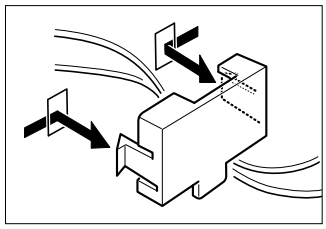


Figure 6.61

3. Remove the one screw securing the ground wire to the SMPS and unplug the connector from the SMPS board.
   Then remove the four screws securing the Fuser to the main frame and take out the Fuser.

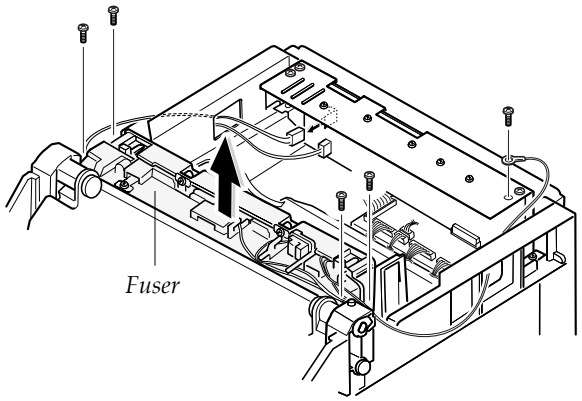


Figure 6.62

Note: When you reassemble the Fuser, if it is difficult to plug the connector to the SMPS board, take out the SMPS by removing the two screws securing the SMPS, then plug the connector to the SMPS board.

6-30 Laser Scanning Unit (LSU)

1. Before you disassemble the Laser scanning unit, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Remove the two screws securing the Fuser guide to the main frame and take out the Fuser guide.

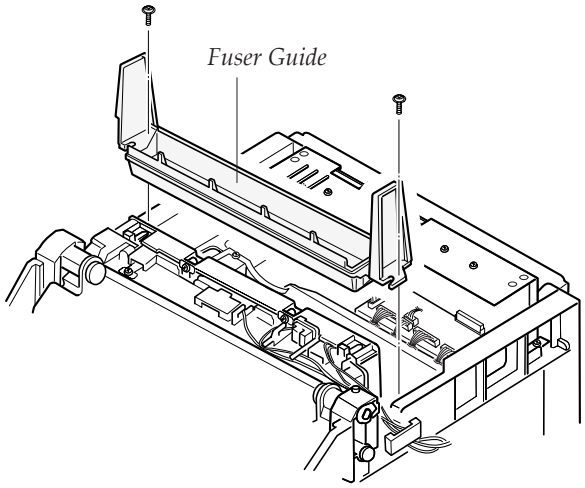


Figure 6.63

3. Unplug the two connectors from the Mother board and remove the four screws securing the LSU to the main frame. Then, take out the LSU.

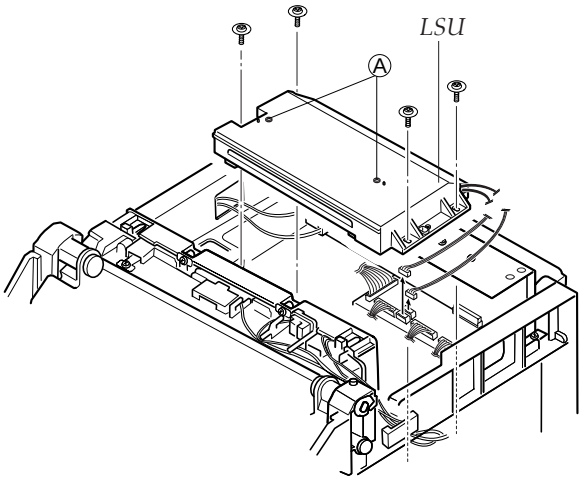


Figure 6.64

Note: When you reassemble:

- Be careful not to be damaged by static electricity when you replace the LSU. Static electricity affects the image quality.
- Make sure that you do not remove the two screws ① located on the top of the LSU.
- If it is difficult to plug the connectors to the Mother board, remove the SMPS first and then plug in the connectors.

6-31 Main Board and LIU Board

1. Remove the two screws and take out the board cover.

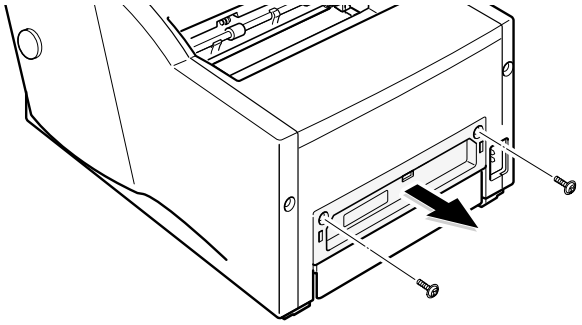


Figure 6.65

2. Unplug all the connectors from the two boards.

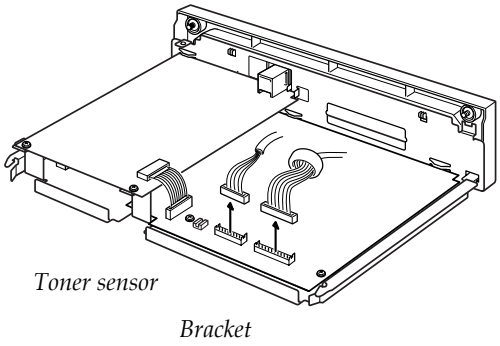


Figure 6.66

Note: Be careful the bracket under the Main board is not bent when you unplug or re-plug the connectors. Toner sensor might be out of place by the malformed bracket.

3. Remove the two screws from the LIU board, and unplug the flat cable from the Main board, and take out the LIU board.

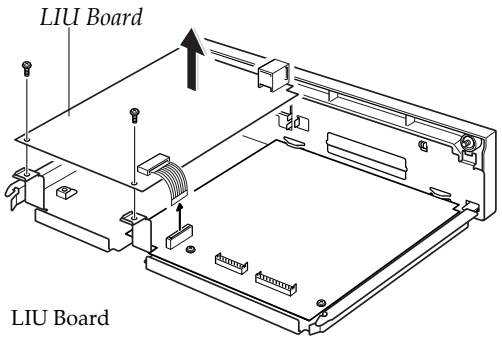


Figure 6.67

4. Remove the two screws from the Main board and take out the Main board.

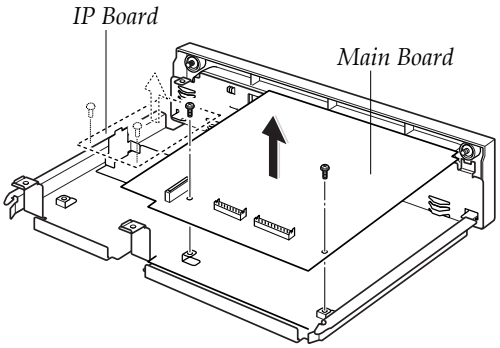


Figure 6.68

Notes:

- When you replace the Main board, if you find IP board next to the Main board, remove the one screw securing the IP board and take out the IP board.

  You do not have to install this IP board, because new Main board contains the IP board features.
- After you replace the Main board, you must perform the Make shading test. For details, see page 7.3.
- When you reassemble the boards, make sure they are properly fitted into their places as shown.

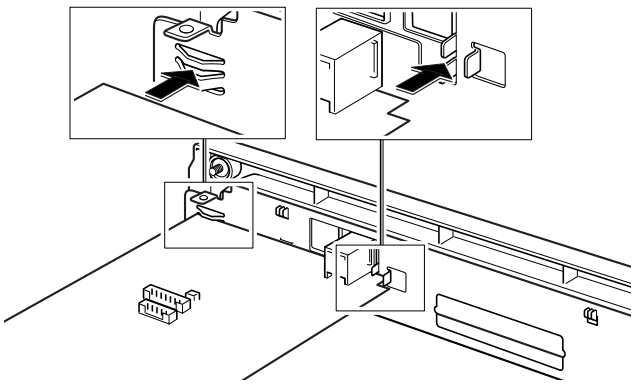


Figure 6.69

6-32 Upper Frame

1. Before you disassemble the Upper frame, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Remove the one screw securing the ground wire to the upper plate.

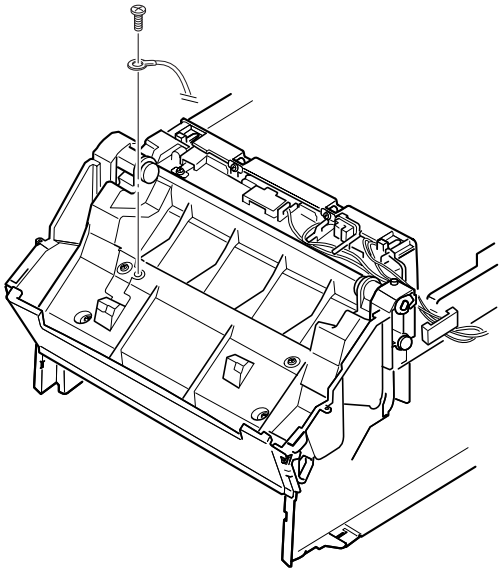


Figure 6.70

3. Unplug the connector (H9) from the HVPS board. Release the connector wire by removing the cover switch that ties wires in a bundle.

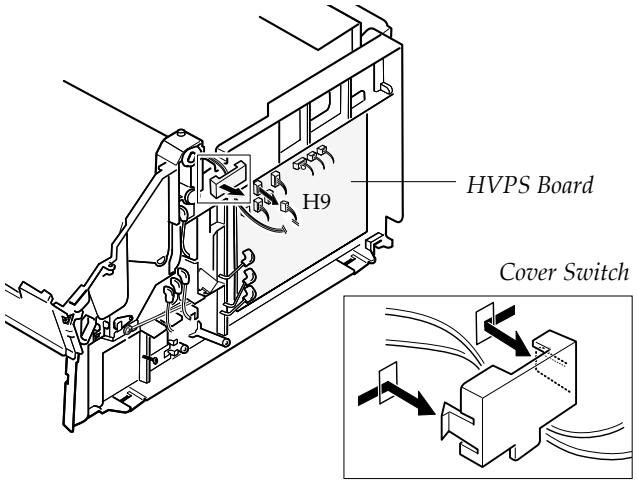


Figure 6.71

4. Press the release switch located on the right side.

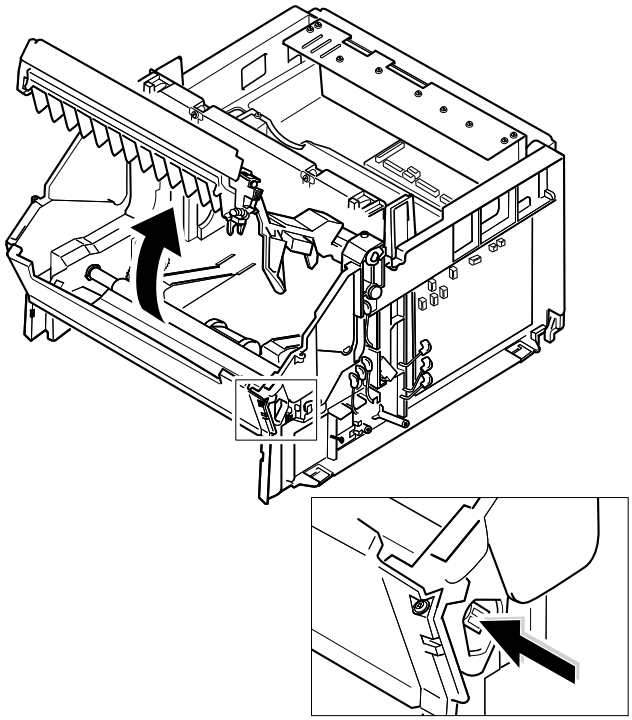


Figure 6.72

5. Remove the E-ring and hinge bracket. Then push the hinge shaft inwards and take it out.

6. Take out the upper plate.

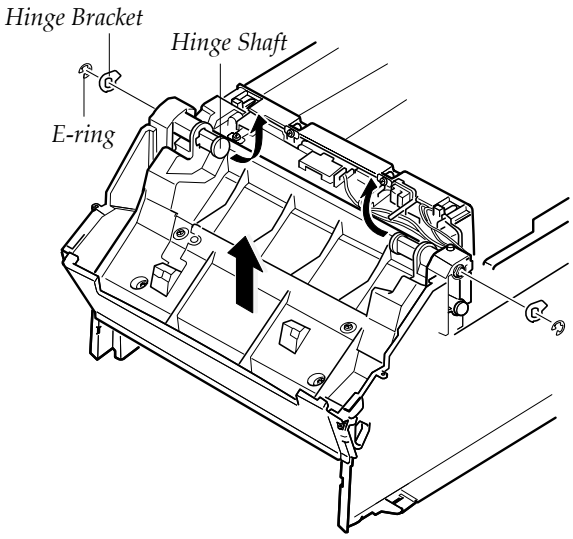


Figure 6.73

6-33 Pick Up Sensor

1. Before you disassemble the Pickup sensor, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11
   - ♦ Upper frame (See page 6-23)

2. Remove the four screws from the upper frame and separate the Upper frame into the Upper guide and Plate.

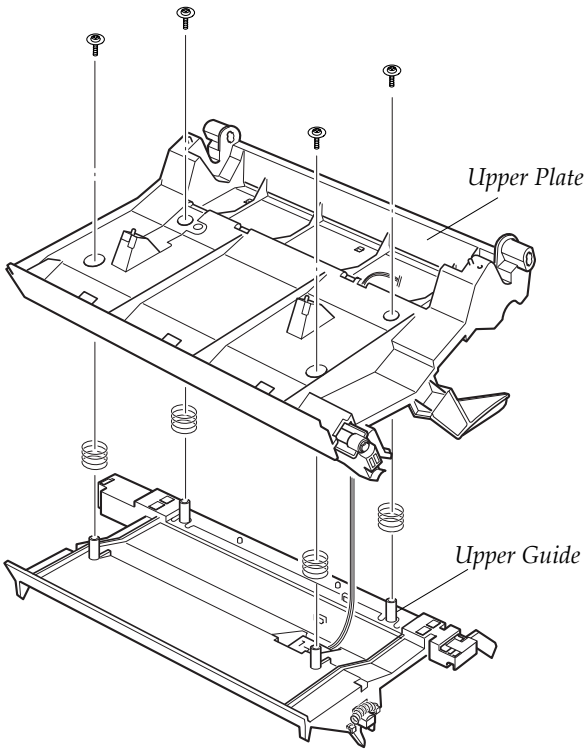


Figure 6.74

3. Use a flat blade screw driver or something to push up the Pick up sensor from the bottom. Then take out the sensor.

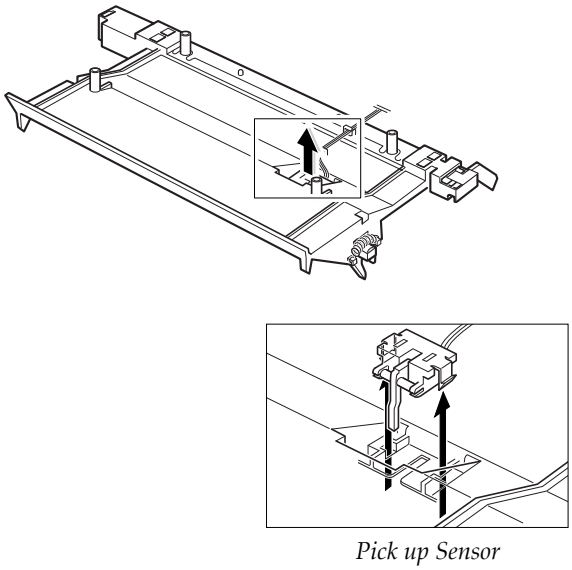


Figure 6.75

6-34 Idle Roller

1. Before you disassemble the Idle roller, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Upper frame (See page 6-23)

2. Remove the four screws from the upper frame and separate the Upper frame into the Upper guide and Plate.

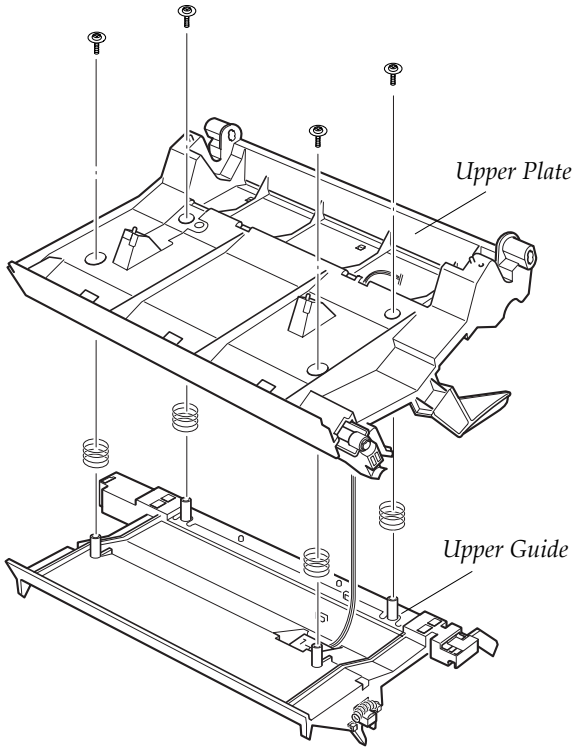


Figure 6.76

3. Remove the spring securing the Idle roller to the Upper guide.

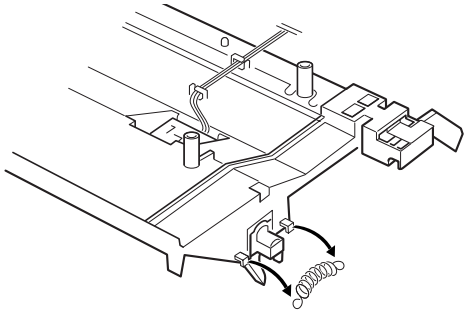


Figure 6.77

4. Use a flat blade screw driver or something to push down the roller through the hole as shown. It releases the tab latched into the Upper guide.

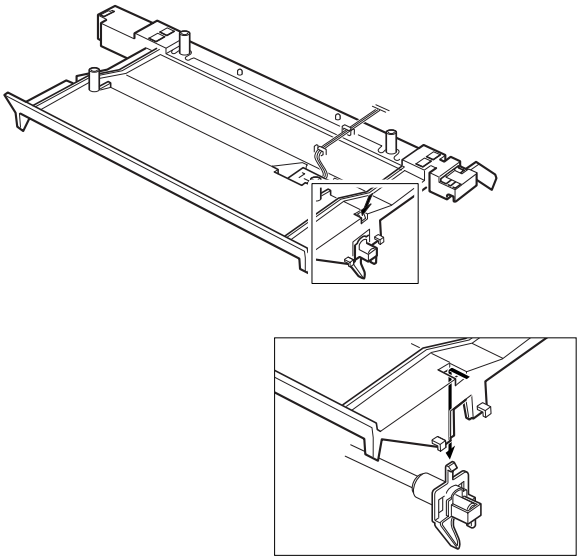


Figure 6.78

5. Take out the Idle roller.

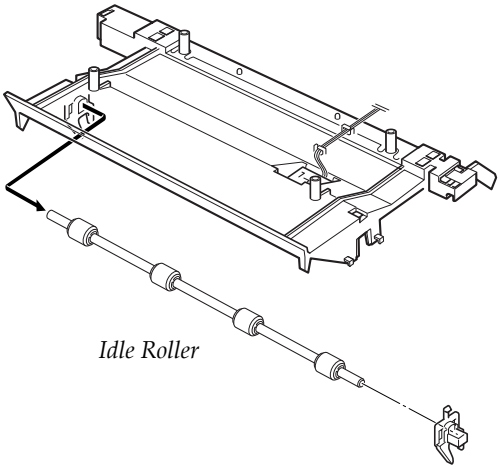


Figure 6.79

6-35 Transfer Roller

1. Before you disassemble the Transfer roller, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Upper frame (See page 6-23)

2. Remove the four screws from the upper frame and separate the Upper frame into the Upper guide and Plate.

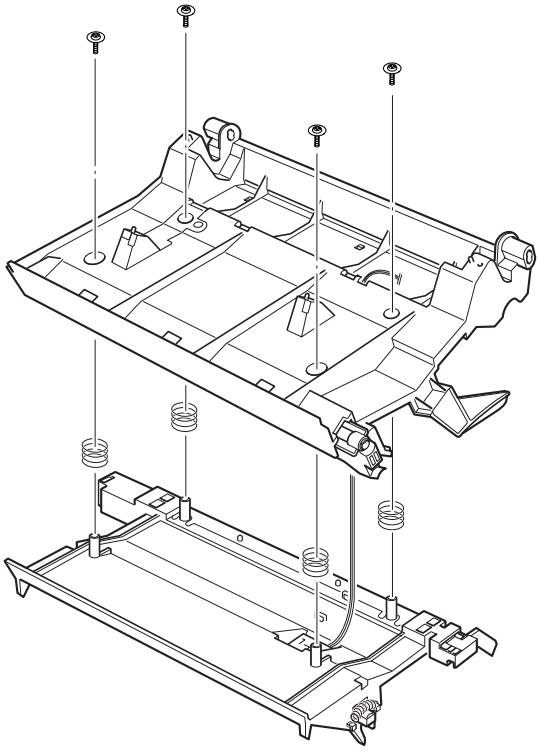


Figure 6.80

3. Remove the locker secured to the roller. You should pull the levers of the locker outwards to release the locker from the roller. Then take out the Idle roller.

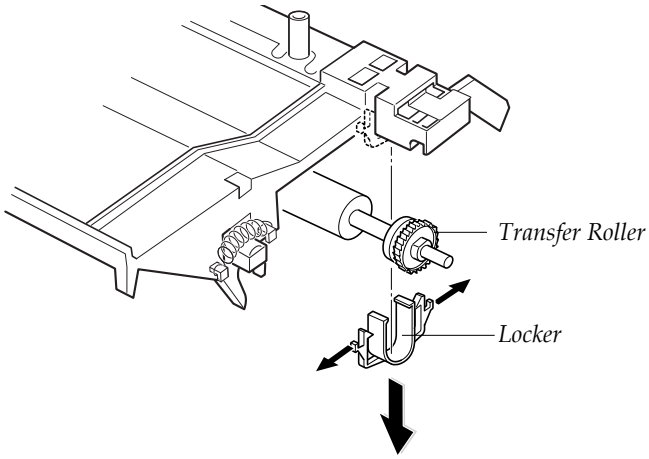


Figure 6.81

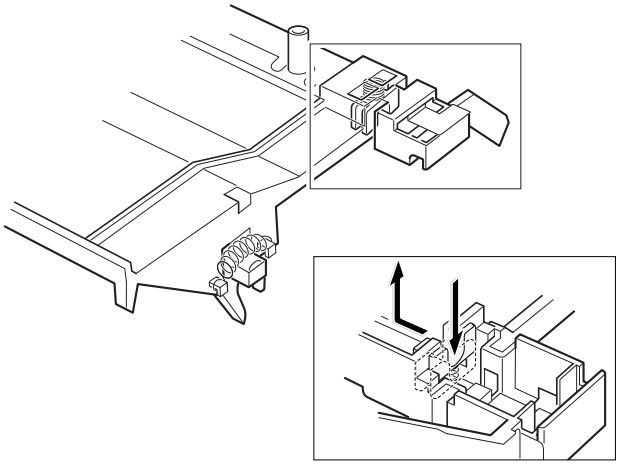
Note: Be careful to keep the surface of the roller clean.

6-36 Transfer Bushing

1. Before you disassemble the Transfer bushing, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Upper frame (See page 6-23)
   - ♦ Transfer roller (See page 6-26)

2. Remove the bushings on the both ends of the roller.

2. Remove the bushings on the both ends of the roller.



Bushing

Figure 6.82

6-37 Developer Driver

1. Before you disassemble the Developer driver, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Gear Z52/25 (See page 6-14)

2. Remove the two screws located next to the Gear Z52/25. Then take out the Developer driver.

2. Remove the two screws located next to the Gear Z52/25. Then take out the Developer driver.

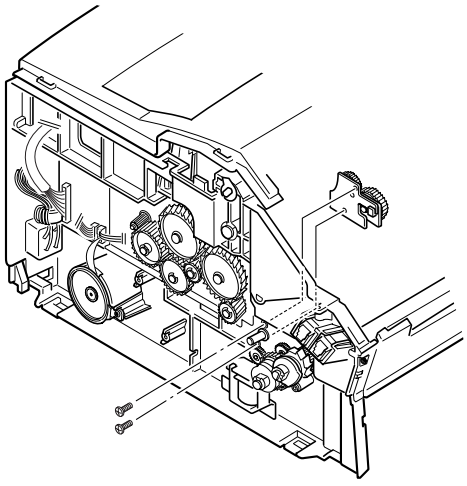


Figure 6.83

6-38 Guide Paper

1. Press the release switch located on the right side.

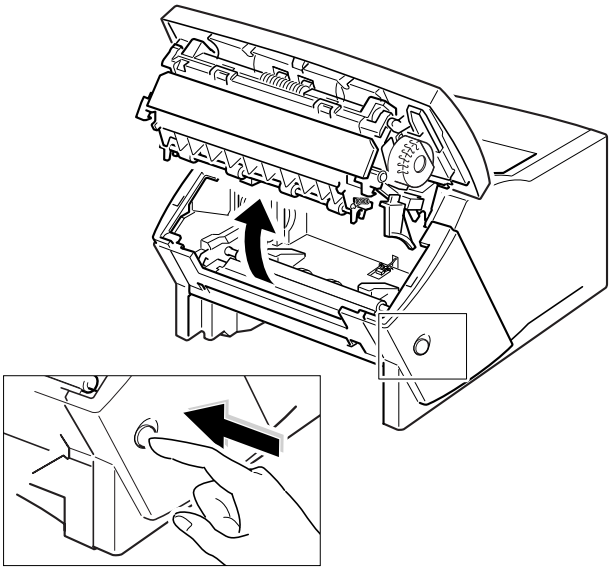


Figure 6.84

2. Remove the two screws securing the Guide paper to the main frame. Take it out.

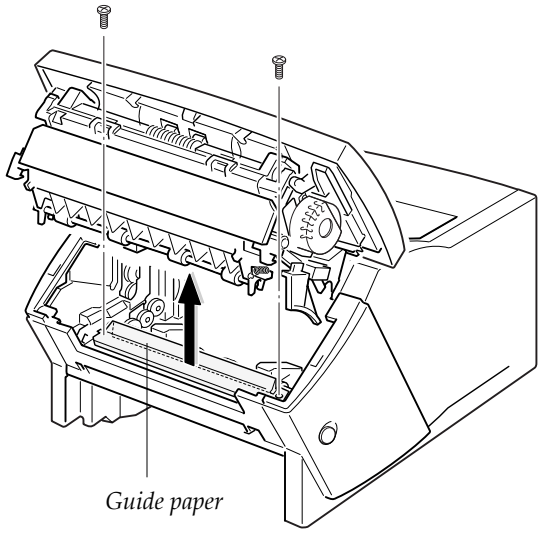


Figure 6.85

6-39 Manual Sensor

1. Before you disassemble the Manual sensor, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)
   - ♦ Guide paper (See page 6-28)

2. Unplug the connector (H6) from the HVPS board, then release the connector wire by removing the cover switch that ties the wire in a bundle.

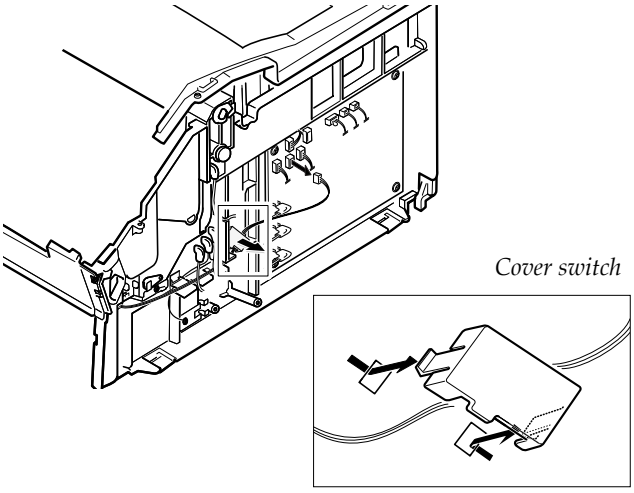


Figure 6.86

3. Insert a flat blade screw driver or something into the hole as shown. Push down to release the sensor and take it out.

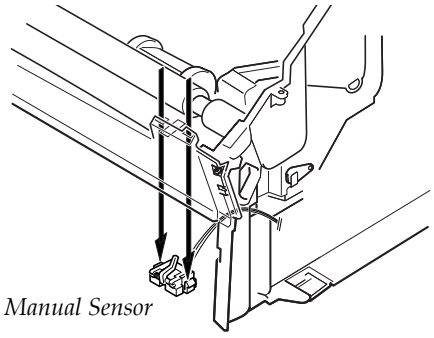


Figure 6.87

6-40 Micro Switch

1. Before you disassemble the Micro switch, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Unplug the connector (H3) from the HVPS board, then release the connector wire by removing the cover switch that ties the wire in a bundle.

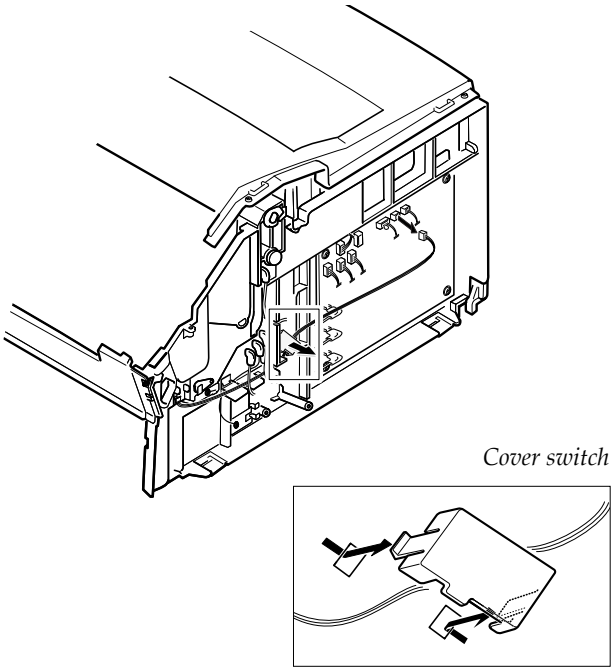


Figure 6.88

3. Insert a flat blade screw driver or something into the hole as shown and push it outwards to release the switch.

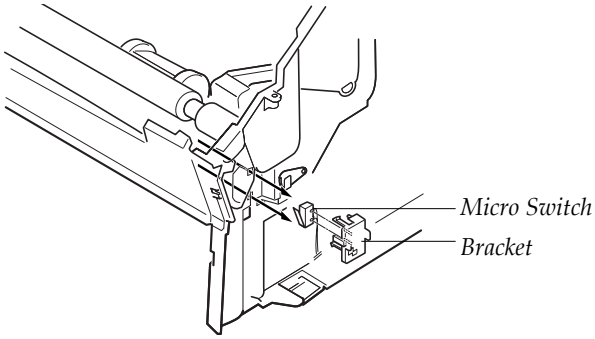


Figure 6.89

6-41 Feed Roller

1. Before you disassemble the Feed roller, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Latch clutch (See page 6-13)
   - ♦ Feed clutch (See page 6-14)

2. Pull the bushing shaft slightly upwards and turn it 45 degrees counterclockwise, so that a hole on the bushing shaft aligns with the hole on the main frame.

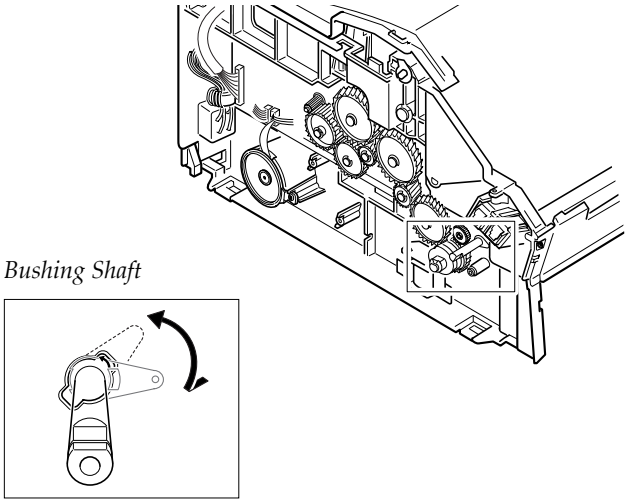


Figure 6.90

3. Bushings are attached on both end of the roller. Push outwards on the bushing shown inside on the left end of the roller.

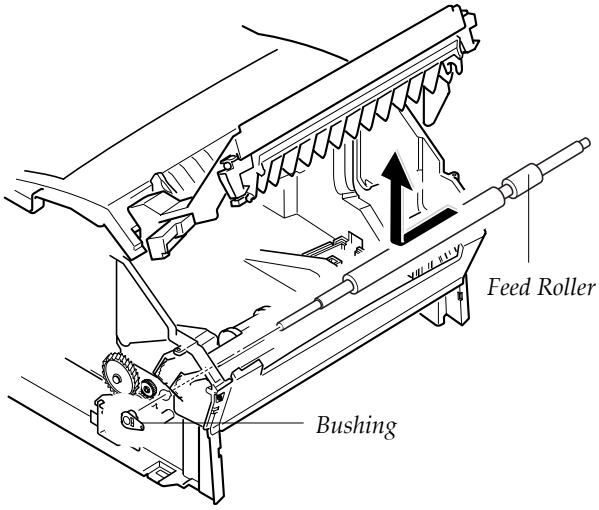


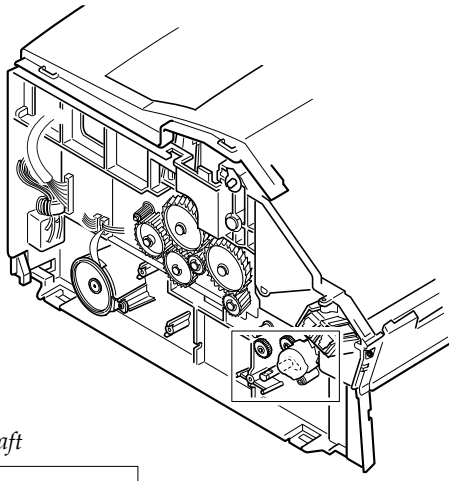
Figure 6.91

Note: Check the roller for any stain. If stained, wipe it off with soft cloth dampened with water. If the roller is heavily worn, replace it with a new one.

6-42 Pick Up Roller

1. Before you disassemble the Pickup roller, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Latch clutch (See page 6-13)
   - ♦ Gear Z52/25 (See page 6-14)
   - ♦ Solenoid (See page 6-13)
   - ♦ Pickup clutch (See page 6-14)

2. Pull the bushing shaft slightly upwards and turn it 45 degrees clockwise, so that a hole on the bushing shaft aligns with the hole on the main frame.



Bushing Shaft

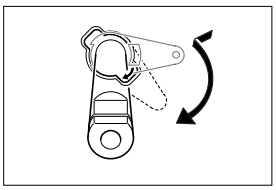


Figure 6.92

3. Bushings are attached on both end of the roller. Push outwards on the bushing shown inside on the left end of the roller.

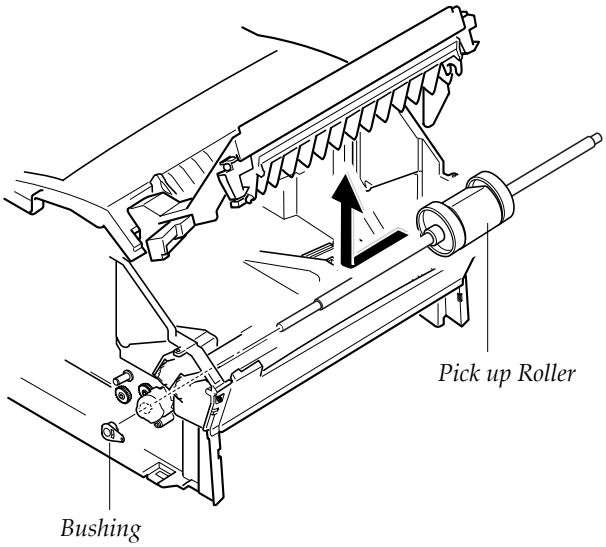


Figure 6.93

Note: Check the roller for friction and deformation. If the rubber is heavily worn or stained, replace it with a new one. If the roller is stained, wipe it off with soft cloth dampened with water.

6-43 Plate-CC, TC, Bias

1. Before you disassemble the plates, you should remove :
   - ♦ Side covers (See page 6-10)
   - ♦ Top cover (See page 6-11)

2. Remove the cap in the end of each highvoltage wire a little bit and pull the wire out while you push down at the point on the wire as shown by using a flat blade screw driver so something. It allows the wire to be released from the plate.

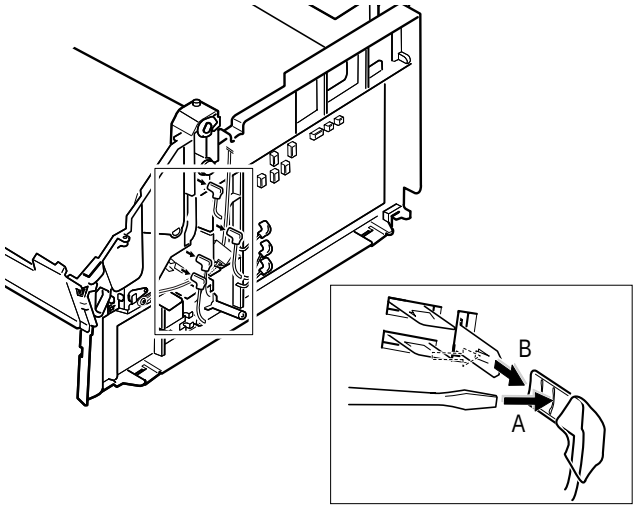


Figure 6.94

3. Press the release switch located on the right side of the main frame to open the upper frame.

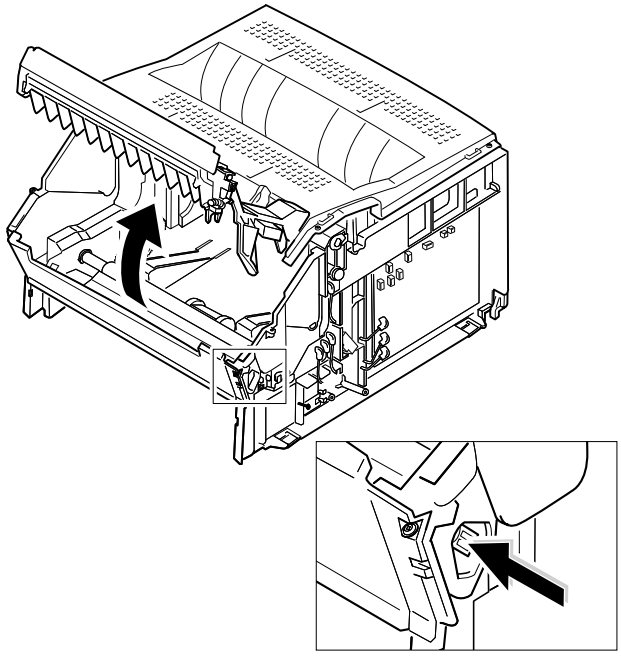


Figure 6.95

4. Holding each end of the plates, take them out.

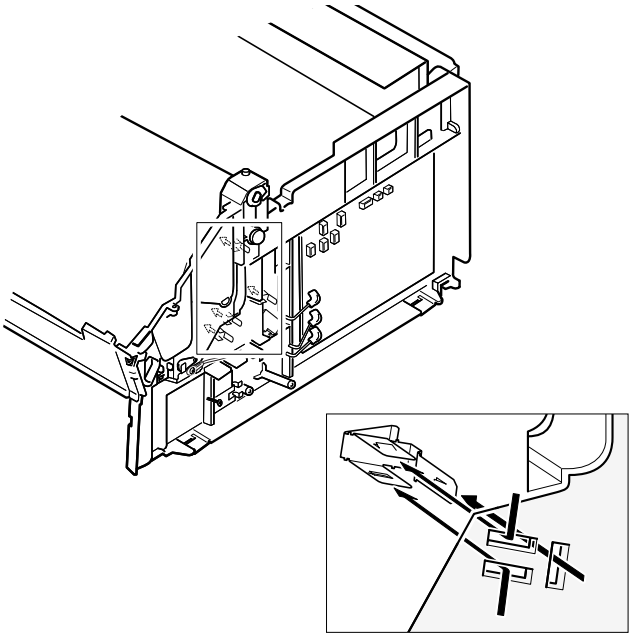


Figure 6.96

Note: When you reassemble the plates, you have to insert it into the correct position. Each position is marked as shown below.

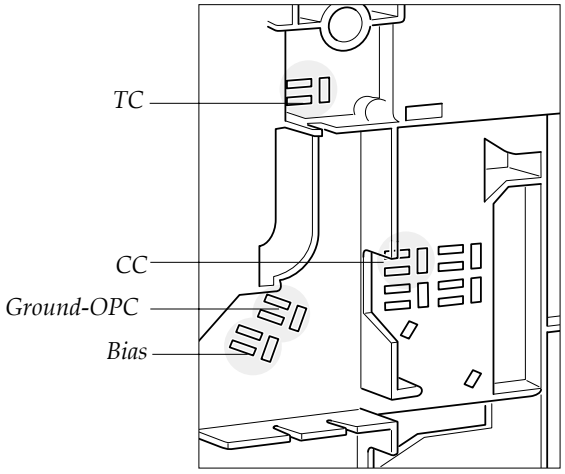


Figure 6.97

6-44 Pad Frame in Cassette

1. Remove the paper cassette out of the machine.

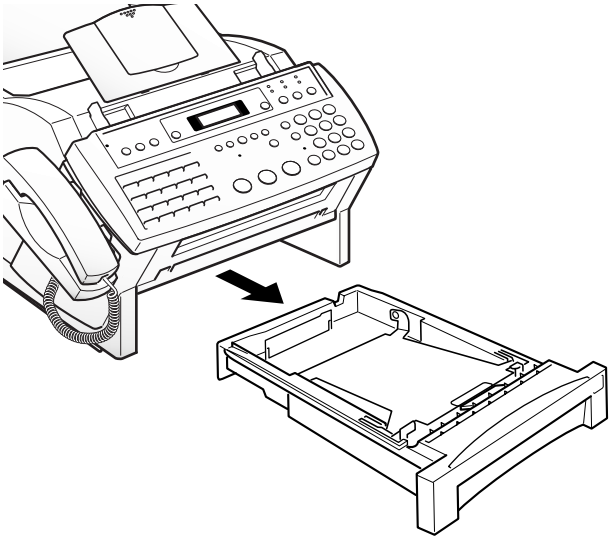


Figure 6.98

2. Push the tabs on eash side of the pad frame inward using a flat blade screw driver or a thin tool to be released from the main frame of the cassette and take out the pad. Be careful not to lose the spring.

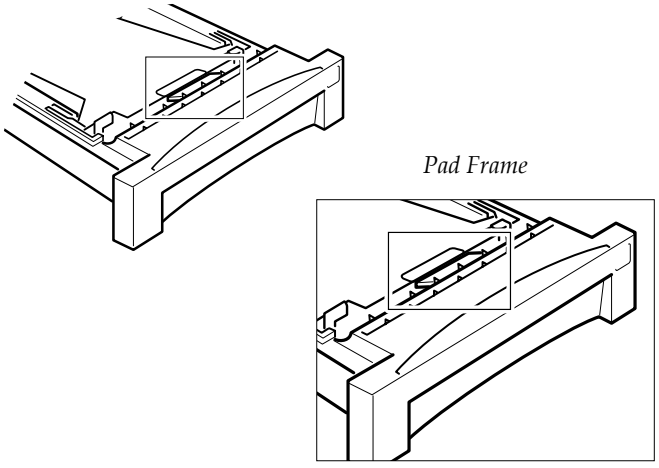


Figure 6.99

Note : When you reassemble the pad frame;

① Put the spring in place.

② Make sure the two legs on the bottom of the pad are correctly hooked as shown below.

③ Press the pad down firmly until the tabs on each side of the pad frame are inserted in place.

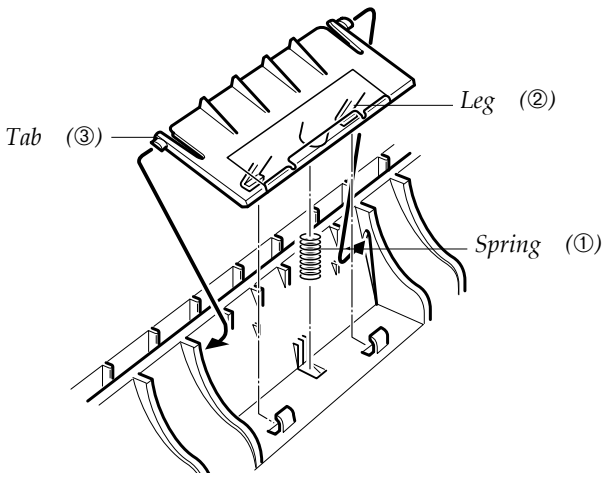


Figure 6.100

6-45 MFP Board (Option)

1. Remove the four screws.

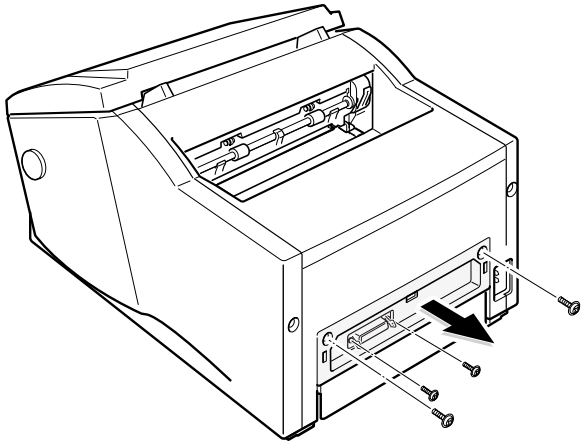


Figure 6.101

2. Unplug all the connectors from the boards.

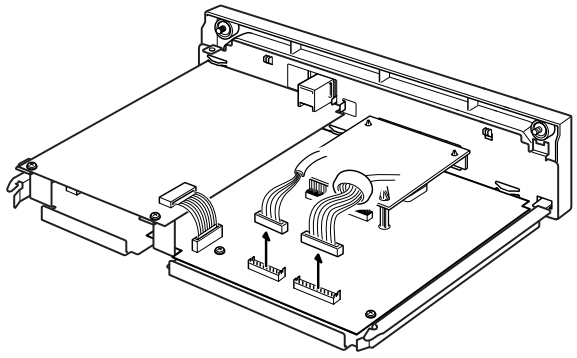


Figure 6.102

3. Pull up the MFP board so that the connector and PCB supporter are released. Take out the MFP board.

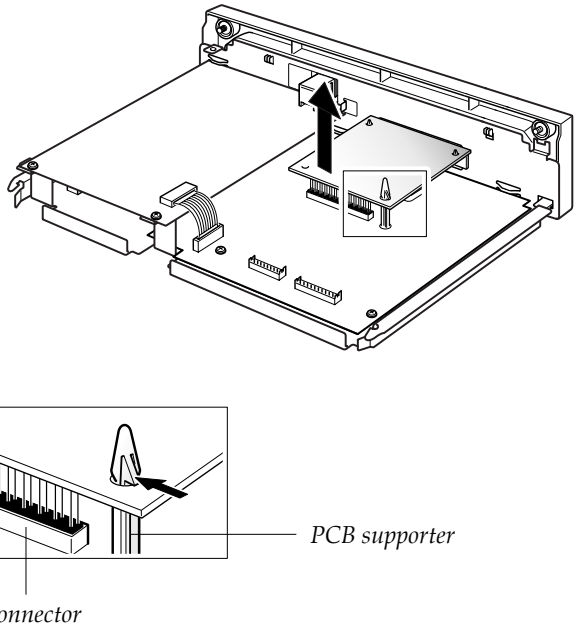


Figure 6.103

6-46 Second Paper Cassette (Option)

6-46-1 General Precautions

Before you disassemble and reassemble components;

1. Unplug the power cord.
2. Remove the 2nd cassette frame from the fax unit which connected to the 2nd cassette frame with the SCF connector.
3. Remove the paper cassette from the 2nd cassette frame.
4. Replace with only an authorized component.
5. Do not force to open or fasten a plastic-material component.
6. Be careful no obstacles are included when you reassemble components.

6-46-2 Side Covers (Left/Right)

1. Remove the four screws securing each side cover. Pull the side cover slightly upwards to take it away from the main frame.

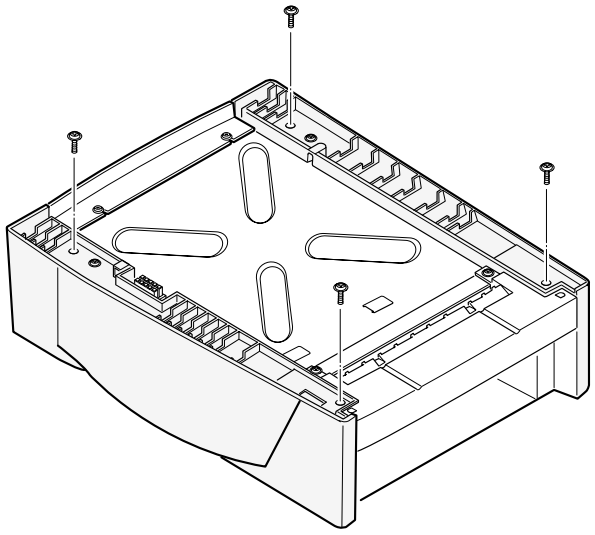


Figure 6.104

6-46-3 Motor

1. Before you disassemble the motor, you should remove :
   ♦ Left side cover (See page 6-35)
2. Unplug the motor connector. Remove the two screws securing the motor and take out the motor.

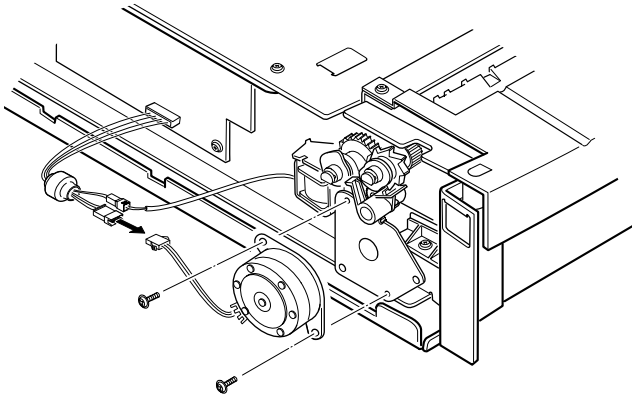


Figure 6.105

3. If you want to remove the motor bracket, pull it out.

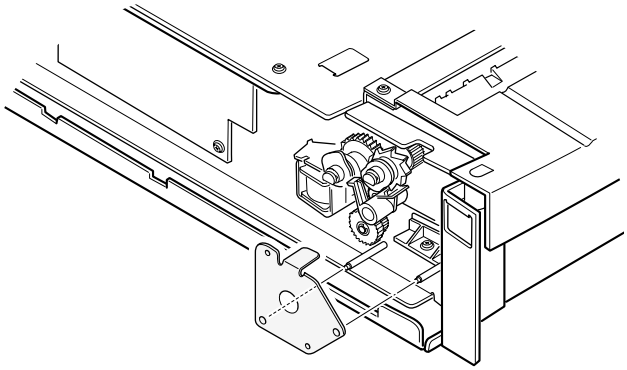


Figure 6.106

6-46-4 Idle Gear, Z5513/Z27

1. Before you disassemble the idle gear, you should remove :
   - ♦ Left side cover (See page 6-35)
   - ♦ Motor bracket (See page 6-35)

2. Remove the E-ring from the gear Z5513. Then take out the gear Z5513.

3. Remove the gear Z27 located under the gear Z5513.

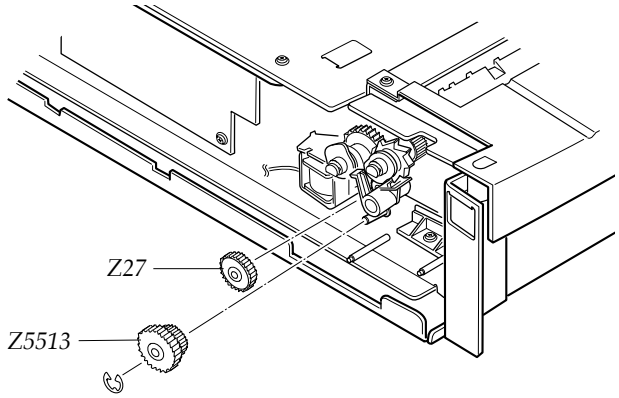


Figure 6.107

6-46-5 Solenoid

1. Before you disassemble the solenoid, you should remove :
   - ♦ Left side cover (See page 6-35)

2. Unplug the connector. Remove the two screws securing the solenoid, and take out the solenoid.

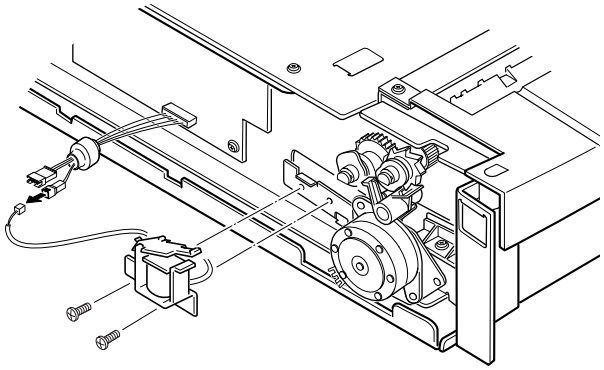


Figure 6.108

6-46-6 Pickup Clutch

1. Before you disassemble the pickup clutch, you should remove :
   - ♦ Left side cover (See page 6-35)
   - ♦ Solenoid (See page 6-36)

2. Remove the E-ring from the pickup clutch. Then take out the pickup clutch.

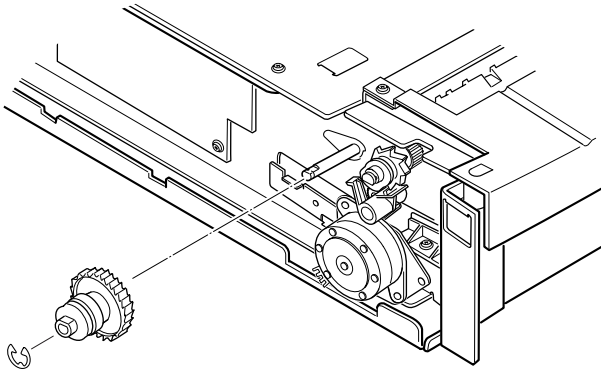


Figure 6.109

6-46-7 Feed Clutch

1. Before you disassemble the feed clutch, you should remove :
   - ♦ Left side cover (See page 6-35)

2. Remove the E-ring from the feed clutch. Then take out the feed clutch.

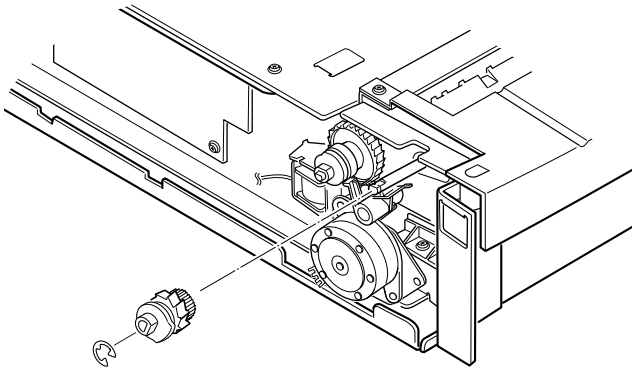


Figure 6.110

6-46-8 Latch Clutch

1. Before you disassemble the latch clutch, you should remove :
   - ♦ Left side cover (See page 6-35)

2. Remove the one screw and take out the latch clutch and its spring.

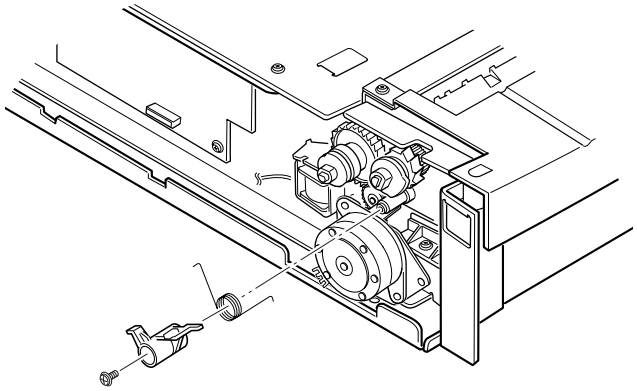
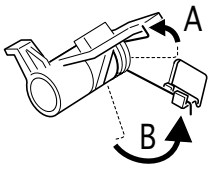


Figure 6.111

Note: When you reassemble the latch clutch, you should set the spring in place as shown below, then replace the clutch.



6-46-9 Idle Gear, SCF

1. Before you disassemble the idle gear, you should remove :
   - ♦ Solenoid (See page 6-36)
   - ♦ Pickup clutch (See page 6-36)
   - ♦ Feed clutch (See page 6-36)
   - ♦ Latch clutch (See page 6-37)

2. Remove the E-ring from the idle gear and take out the idle gear.

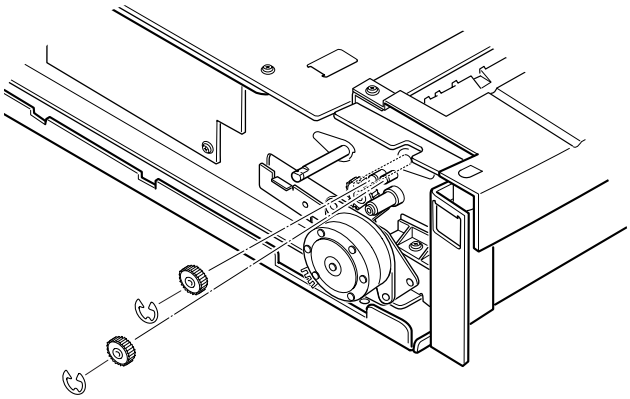


Figure 6.112

6-46-10 SCF Control Board

1. Before you disassemble the control board, you should remove :
   - ♦ Left side cover (See page 6-35)

2. Unplug the two connectors from the board. Remove the two screws from the board and take out the board.

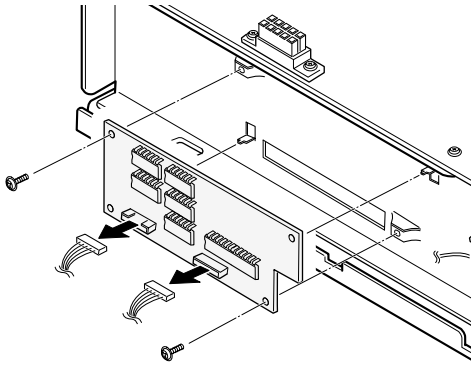


Figure 6.113

6-46-11 Feed Roller and Idle Roller

1. Before you disassemble the rollers, you should remove :
   ♦ Side covers (See page 6-35)

2. Remove the four screws securing the dummy cassette. Pull the dummy cassette towards you and take it away from the main frame.

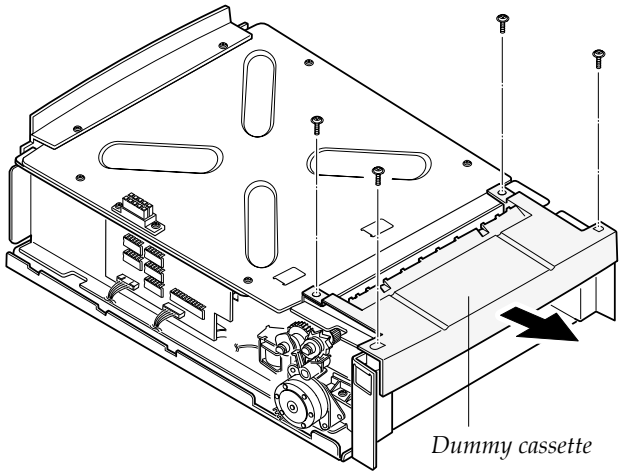


Figure 6.114

3. Remove the E-ring from the feed clutch on the left side of the cassette frame, and take out the feed clutch. See the figure 6.113.

4. Remove the two idle springs shown inside main frame.

5. Remove the latch clutch and its spring.

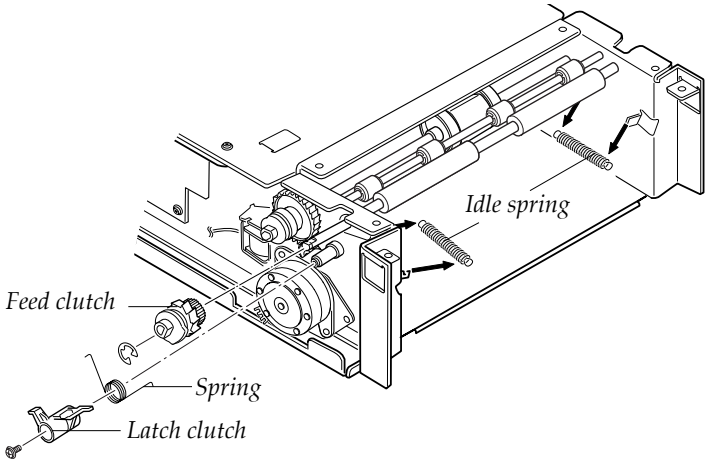


Figure 6.115

6. To remove the feed roller, pull the bushing on the left end of the feed roller slightly upwards and turn it in the direction of arrow so that a hole on the bushing aligns with the hole on the main frame, then take it away from the roller shaft. Now, you can take out the feed roller.

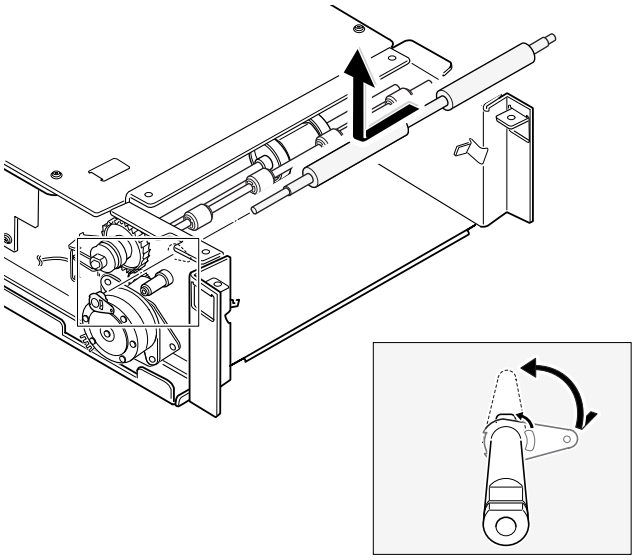


Figure 6.116

7. To remove the idle roller, push the bushing on the left end of the idle roller slightly outwards and take it away from the roller. Then take out the roller.

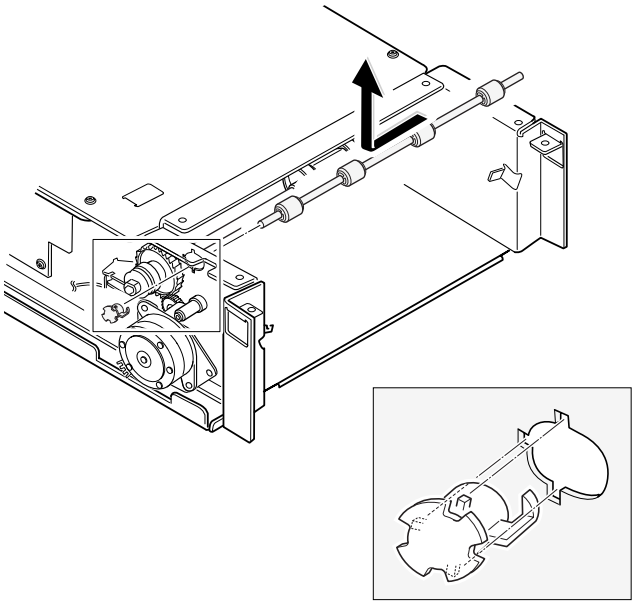


Figure 6.117

6-46-12 Pickup Roller

1. Before you disassemble the pickup roller, you should remove :
   - ♦ Solenoid (See page 6-36)
   - ♦ Pickup clutch (See page 6-36)
   - ♦ Dummy cassette (See page 6-38)

2. Pull the bushing on the left end of the pickup roller slightly upwards and turn it in the direction of arrow so that a hole on the bushing aligns with the hole on the main frame, then take it away from the roller. Then, take out the pickup roller.

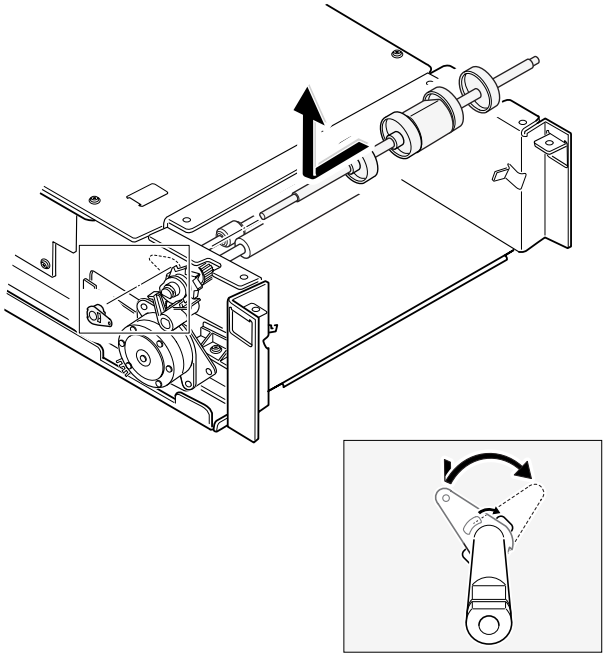


Figure 6.118

6-46-13 SCF Connector

1. Before you disassemble the connector, you should remove :
   - ♦ Left side cover (See page 6-35)

2. Unplug the one connector from the PCB. Remove the ground screw. Remove the two screws securing the SCF connector and take out the connector.

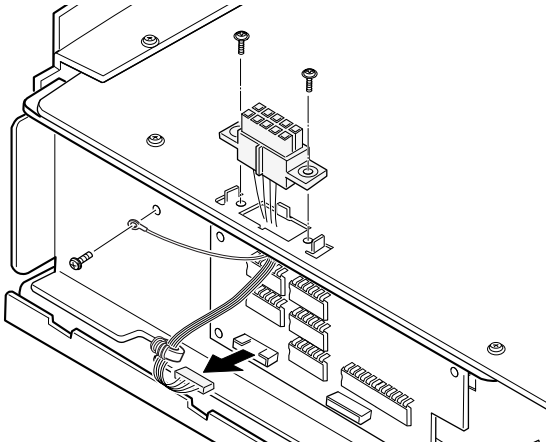


Figure 6.119

6-46-14 Cassette Holder

1. Before you disassemble the holder, you should remove :
   - ♦ Right side cover (See page 6-35)

2. Remove the spring. Turn the holder in vertical and take it away from the frame.

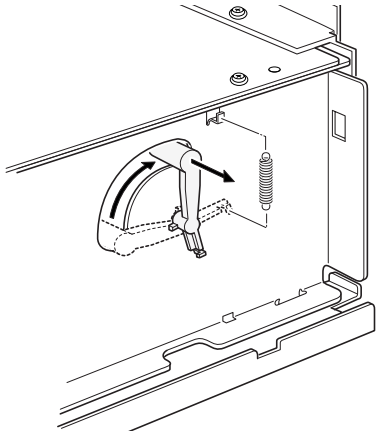


Figure 6.120

6-46-15 Pad Frame in Second Cassette

1. Remove the paper cassette out of the second cassette frame.

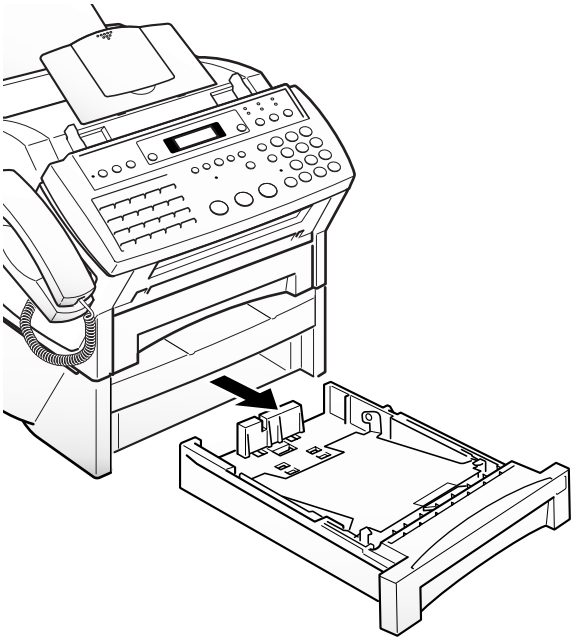


Figure 6.121

2. Push the tabs on eash side of the pad frame inward using a flat blade screw driver or a thin tool to be released from the main frame of the cassette and take out the pad. Be careful not to lose the spring.

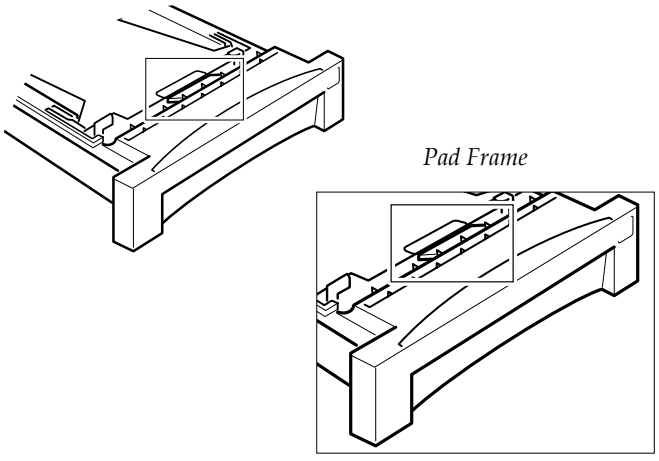


Figure 6.122

Note : When you reassemble the pad frame;

① Put the spring in place.

② Make sure the two legs on the bottom of the pad are correctly hooked as shown below.

③ Press the pad down firmly until the tabs on each side of the pad frame are inserted in place.

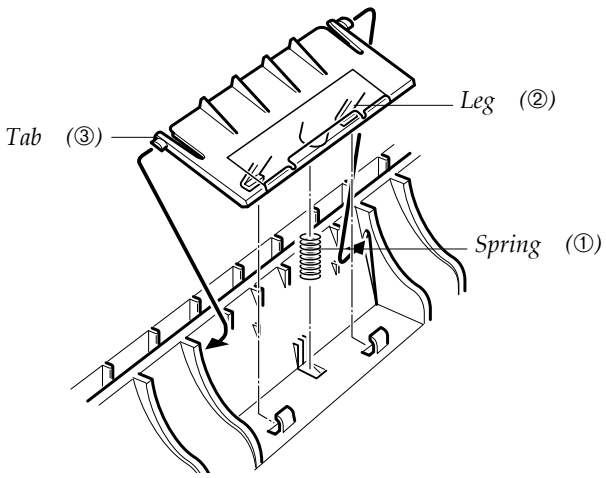


Figure 6.123

7. Maintenance & Troubleshooting

7-1 Preventative Maintenance

The cycle period outlined below is a general guideline for maintenance. The example list is for an average usage of 50 transmitted and received documents per day. Environmental conditions and actual use will vary these factors. The cycle period given below is for reference only.

	COMPONENT	CLEANING CYCLE	REPLACEMENT CYCLE	SOLUTION
SCANNER	ADF Rubber		20,000 Pages	See p.6-2
	ADF Roller/Feed Roller		50,000 Pages	See p.6-5
	Roll Pinch		50,000 Pages	See p.6-7
	White Roller	6 Months	50,000 Pages	See p.6-2
	CIS	6 Months		See p.6-4
PRINTER	Cartridge		5,000 Pages	See p.3-13
	Cleaning Felt		5,000 Pages	See p.3-15
	Pickup Roller	6 Months	50,000 Pages	See p.6-31
	Feed Roller	6 Months	50,000 Pages	See p.6-30
	Transfer Roller		50,000 Pages	See p.6-26
	Fuser		80,000 Pages	See p.6-20
	Driver		80,000 Pages	See p.6-15
	DRV, DEV		80,000 Pages	
	Frame PAD		50,000 Pages	See p.6-33

7-2 Diagnostics

This section describes methods and procedures to isolate the cause of a malfunction in the machine. This machine displays diagnostic information on the LCD. In addition, it can perform a series of tests that allow the machine to observe individual machine functions.

7-2-1 Error Messages

Error Message	Description	Solution
BUSY REDIAL?	The machine is waiting the programmed interval to automatically redial.	You can press START to immediately redial, or STOP to cancel the redial operation.
COMM. ERROR	A problem with the facsimile communications has occurred.	Try again.
INCOMPATIBLE	Remote party did not have the requested feature, such as a confidential transmission or relay transmission.	Reconfirm your remote party's feature.
	It also occurs if the remote machine has insufficient memory space to complete the operation you are attempting	
DOCUMENT JAM	Loaded document has Jammed in the feeder	Clear the document Jam.
DOOR OPEN OR FUSER COVER OPEN	The top cover is not securely latched.	Press down on the cover until you feel it latch securely.
	The fuser cover is not securely latched.	Replace the cover firmly until it clicks in place.

Error Message	Description	Solution
GROUP NOT AVAILABLE	You have tried to select a group location where only a single location number can be used, such as when adding locations for a multi-dial operation.	Try again, check location for group.
LINE ERROR	Your unit cannot connect with the remote machine, or has lost contact because of a problem on the phone line.	Try again. If failure persists, wait an hour or so for the line to clear then try again.
LOAD DOCUMENT	You have attempted to set up a sending operation with no document loaded.	Load a document and try again.
MEMORY FULL	The memory has become full.	Either delete unnecessary documents, or retransmit after more memory becomes available, or split the transmission into more than one operation.
NO ANSWER	The remote machine was not answered after all the redial attempts.	Try again. Make sure the remote machine is OK.
TONER EMPTY or NO CARTRIDGE	No toner cartridge in the fax machine. The machine stops.	Install the toner cartridge in place properly.
NO. NOT ASSIGNED	The one-touch or speed dial location you tried to use has no number assigned to it.	Dial the number manually with the keypad, or assign the number.
NO PAPER or NO CASSETTE	The recording paper has run out. The printer system stops.	Load the recording paper in the paper cassette.
OVERHEAT	The printer part has overheated.	Your unit will automatically return to the standby mode when it cools down to normal operating temperature. If failure persists, call service.
PAPER JAM 0	Recording paper has jammed in paper feeding area.	Press STOP and clear the jam.
PAPER JAM 1	Recording paper has jammed inside the unit.	Clear the jam.
PAPER JAM 2	The jammed paper still remains inside the unit.	Clear the jam.
POLL CODE ERROR	When setting up to poll another fax machine, you have used an incorrect poll code.	Enter the correct poll code.
POLLING ERROR	The remote fax machine you want to poll is not ready to respond to your poll.	The remote operator should know in advance that you are polling and have their fax unit loaded with the original document.
POWER FAILURE	A power failure has occurred.	If there has been documents stored in memory. Power failure report will be printed automatically when the power is restored.
TONER EMPTY, RE-PLACE[CARTRIDGE]	The toner is empty. The machine stops.	Replace with a new toner cartridge.
TONER LOW	The toner is almost empty.	After recording several sheets of letter size recording paper, 'TONER EMPTY, REPLACE[CARTRIDGE]' message appears in the display, and the machine stops. Replace with a new one.
WARM UP PLEASE WAIT	The machine is warming up and is off line.	Wait until the machine is on-line.

7-2-2 Test Mode

The test mode is used to test certain functions of the machine. The available tests are:

- Pattern Test
- Switch Test
- CIS Test
- Modem Test
- Memory Test
- ROM Test
- Make Shading

To enter the Test Mode:

1. Get into the Tech mode by pressing **MENU**, #, **1**, **9**, **3**, **4**.

2. In Tech mode, press **MENU,** and one-touch 04 'SYSTEM SETUP'.

3. Scroll to the options by pressing ▼ or ▲ repeatedly until you find the one you want.

4. Press **ENTER** to initiate the test mode.

PATTERN TEST

There are 2 different pattern tests which can be run to determine the condition of the LSU and the printer components. When the LCD prompts you to choose **PATTERN 1**, press **ENTER**. If you want to choose **PATTERN 2**, press ▼ or **STOP**, and press **ENTER** when the LCD displays '**PATTERN 2**'. The test patterns include various black, medium gray, and light gray scales. If the machine is operating properly, each area appears even, distinct, and with no inconsistencies in printing.

SWITCH TEST

This test checks the operation of the LCD display and the LED indicators that interface the switches on the operation panel.

CIS TEST

This test mode checks the condition of the Contact Image Sensor. This is a true test of the white reference level.

MODEM TEST

This test causes the machine to generate a particular frequency to verify the operation of the modem control circuits and the modem.

MEMORY TEST

This test is used for checking the Random Access Memory (RAM) on the main PBA. If all memory is working normally, the LCD shows **TESTING OK!**. When this testing is carried out, any picture data stored in memory is erased.

ROM TEST

This test mode will display and check the current ROM level in your machine.

```
SF6500      /OK
CHECK SUM=C0, V01
```

MAKE SHADING

This procedure is needed to set (make) a new shading reference value. The reference value is preset at factory. However, when the CIS or the main board is replaced with new one, the reference value must be set again.
Load the white, letter-sized paper into the feeder and perform the test mode (**MENU**+ONE-TOUCH 04 '**SYSTEM SETUP**' in tech mode). When you choose '**MAKE SHADING ?**' option, the LCD displays '**REFERENCE [WHITE PAPER]**', or '**REFERENCE [WHITE ROLLER]**'. **[WHITE PAPER]** message indicates this procedure has been already performed. The **[WHITE ROLLER]** message indicates you must perform this procedure. Follow the next steps as instructed through the LCD window. After the shading value is newly set, the shading value pattern is automatically printed. Check for the waveform in the pattern. It is best when the wave form is level. If there are many points sharply broken, perform the Make shading procedure several times until you get a level waveform.

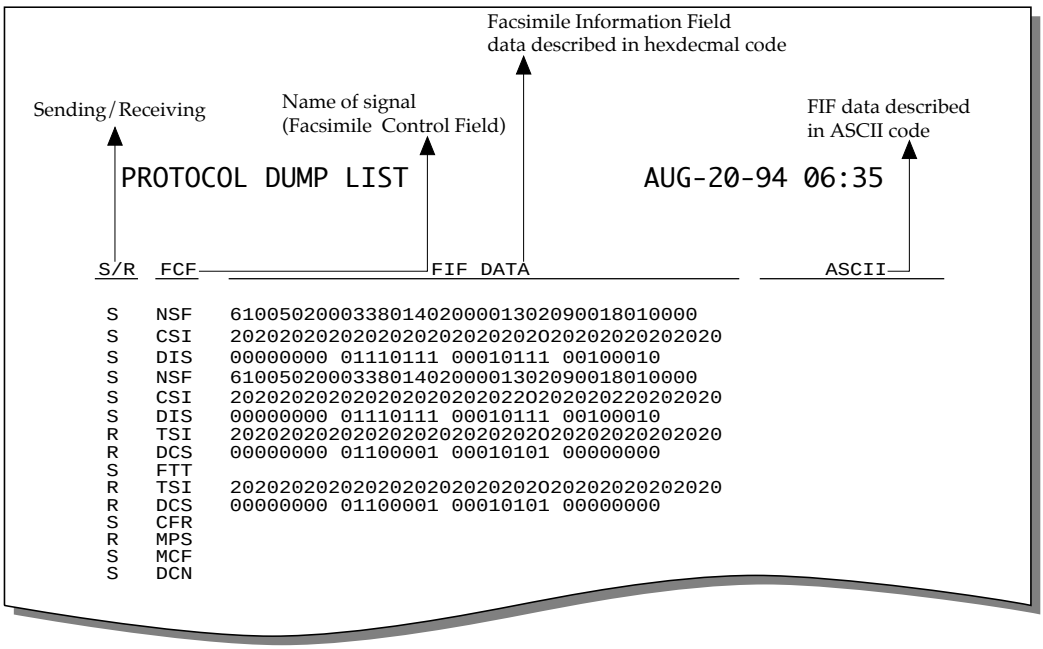
7-2-3 Maintenance List

A number of reports can be printed from the fax machine within the test mode. The protocol list and memory dump list all contain detailed information which may be required when contacting technical support.

To printout the protocol and memory dump lists:

1. Get into the Tech mode by pressing **MENU**, **#**, **1**, **9**, **3**, **4**.
2. In Tech mode, press **MENU**, and one-touch 16 'TX. CONFIRM'.
3. Press ▼ or ▲ repeatedly until you find the Protocol Dump List. When you find 'PROTOCOL REPORT?', press **ENTER**.

SAMPLE OF A PROTOCOL DUMP LIST



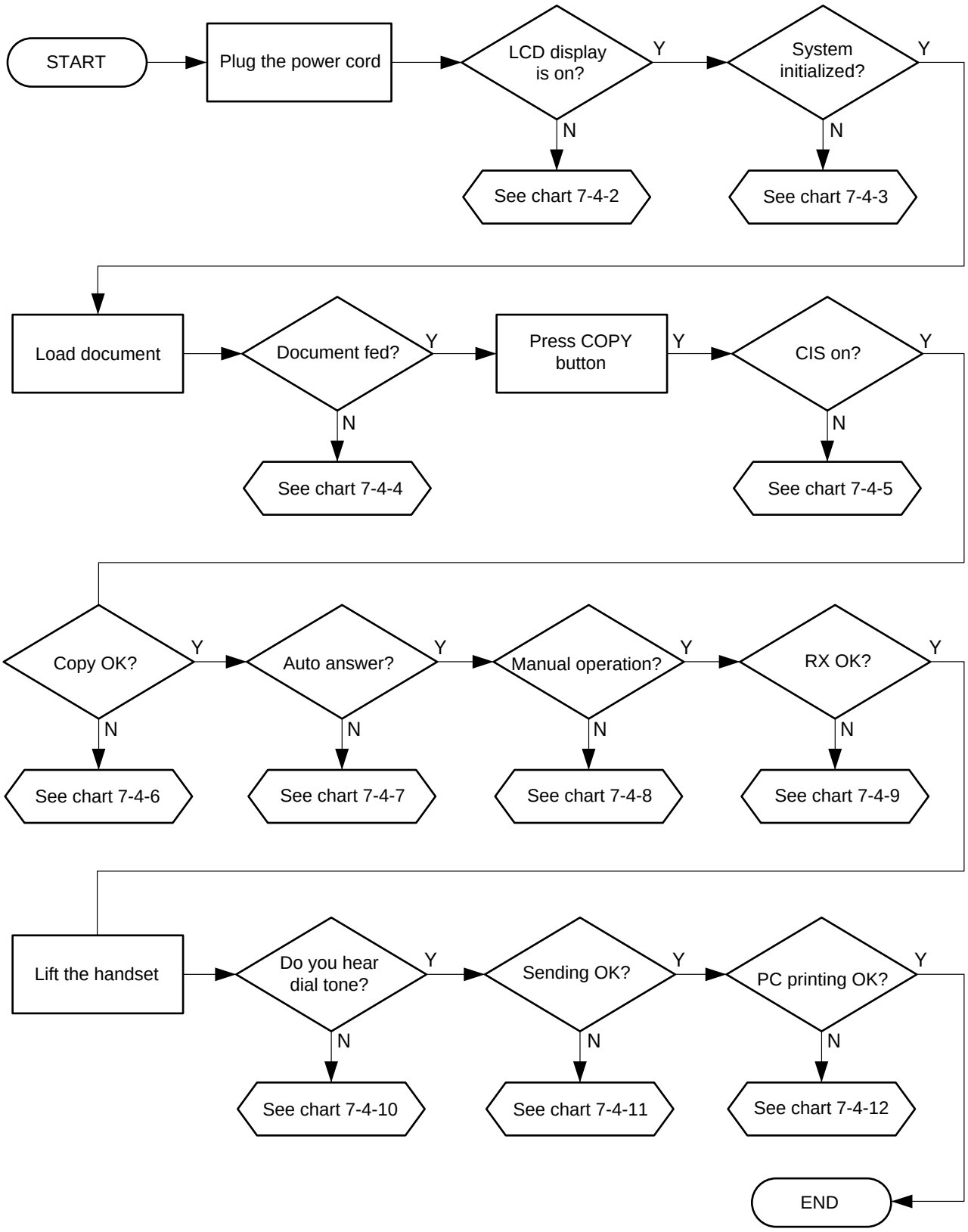
7-3 Remote Diagnostics and Control

Remote Diagnostics on the dex 825 is preformed by a remote PC. The dex 825 has to be conditioned o that remote PC can perform remote diagnostics.

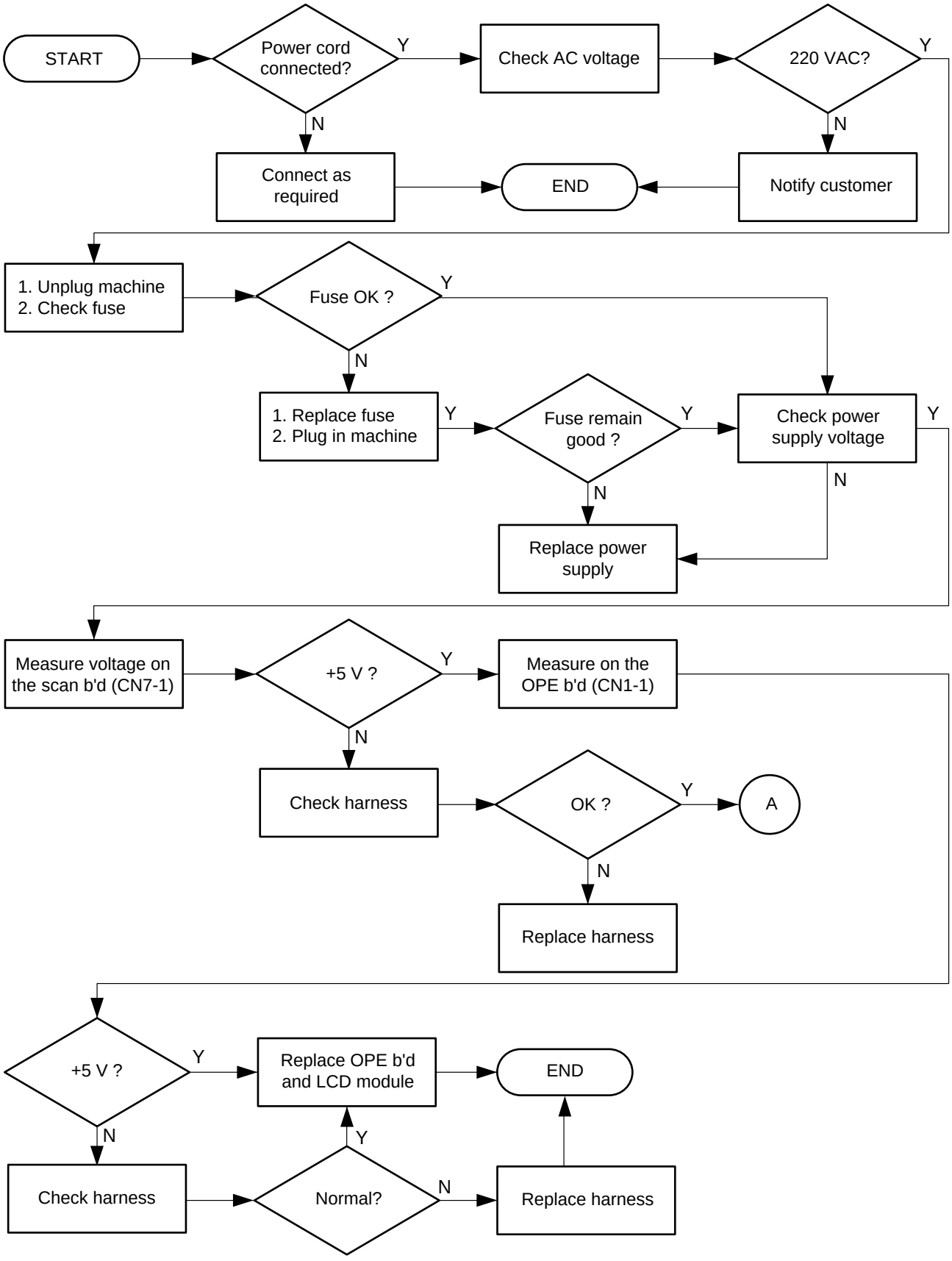
1. Press **MENU**, One-touch 04 'SYSTEM SETUP'.
2. Press ▲ or ▼ until 'REMOTE DIAGNOSIS PROTECTION ?' is displayed.
3. Press **ENTER**.
4. Press **1** for protection or press **2** to allow remote diagnosis.
5. Press **ENTER**.
6. Press **STOP** to exit routine.

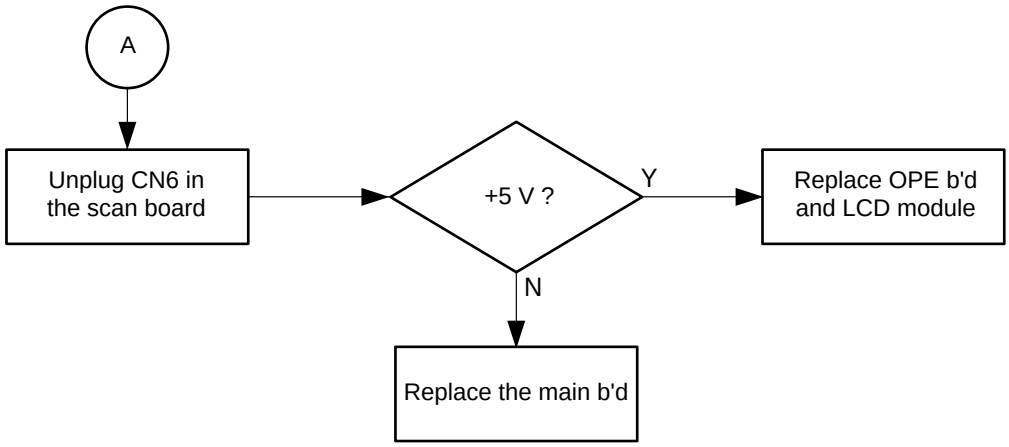
7-4 Troubleshooting Flow chart

7-4-1 Overall

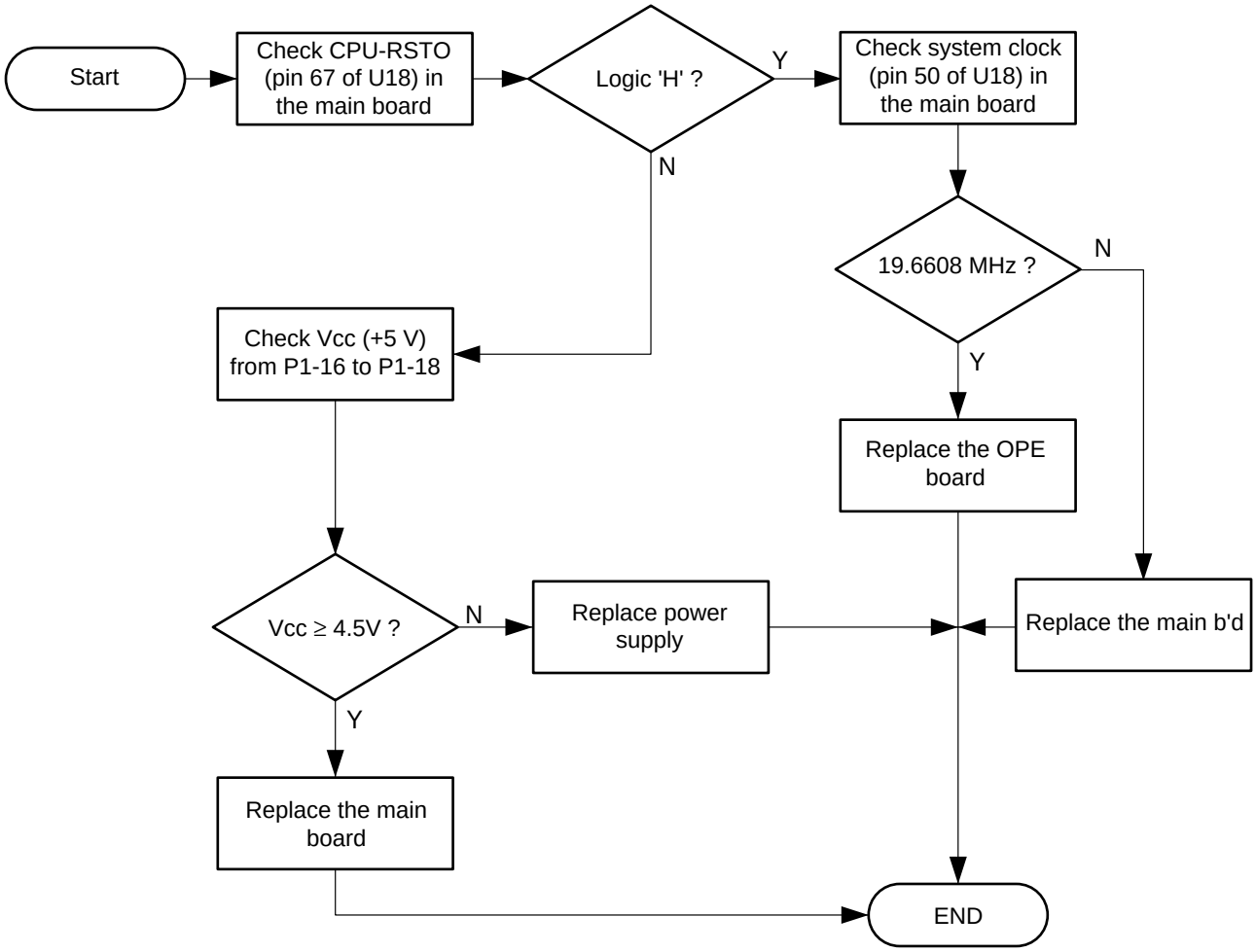


7-4-2 Malfunction of LCD Display

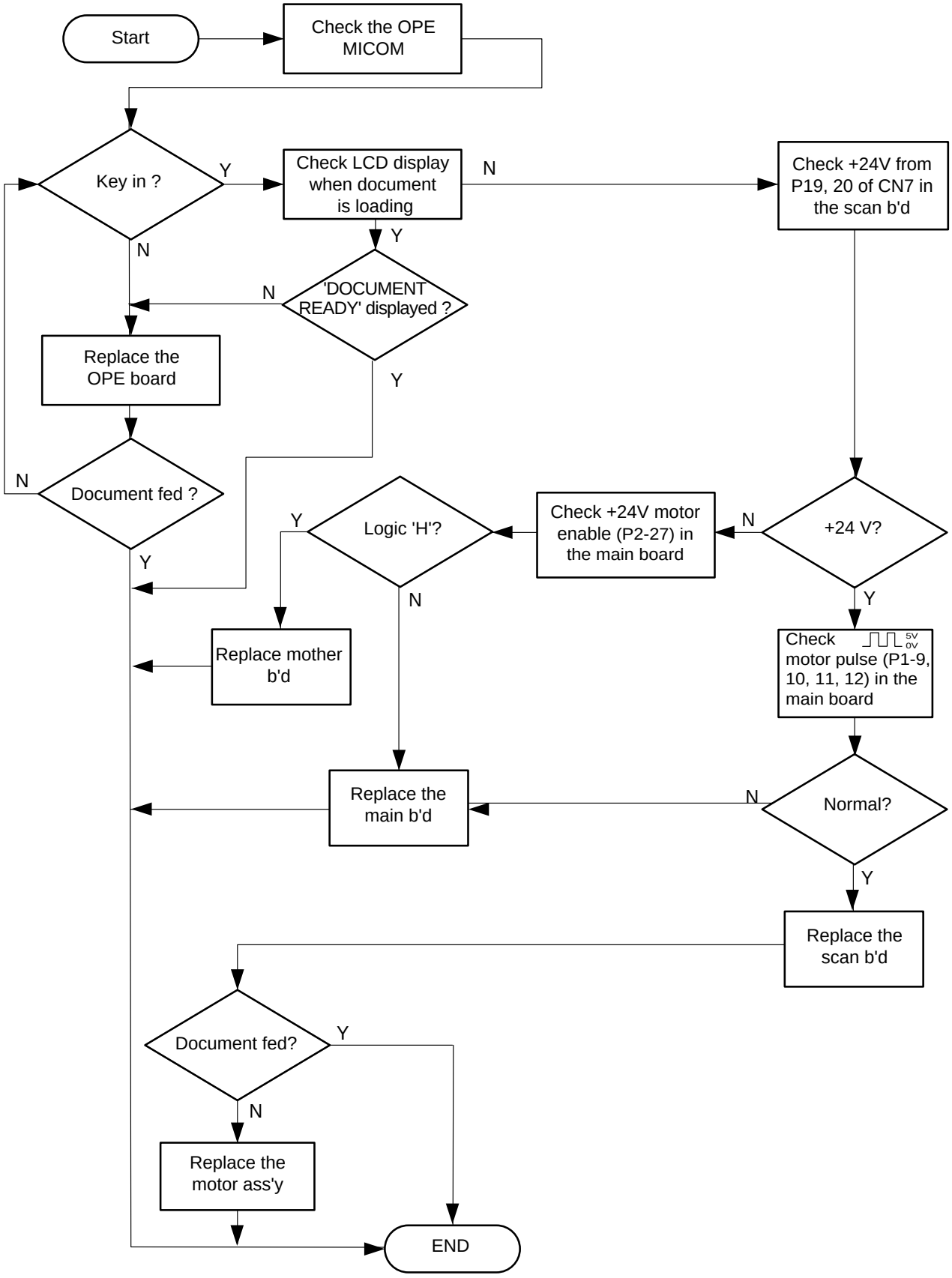




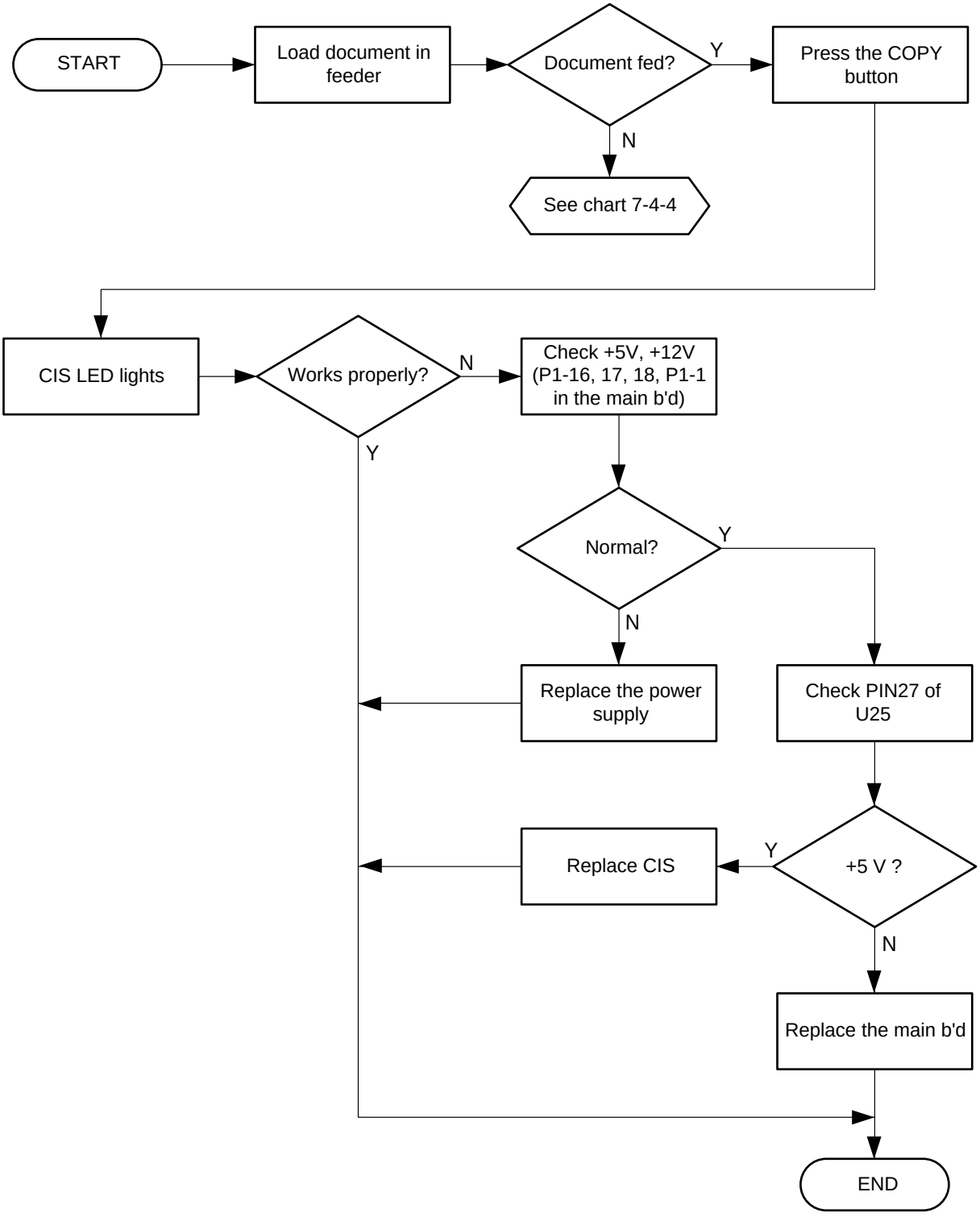
7-4-3 System Not Initialized



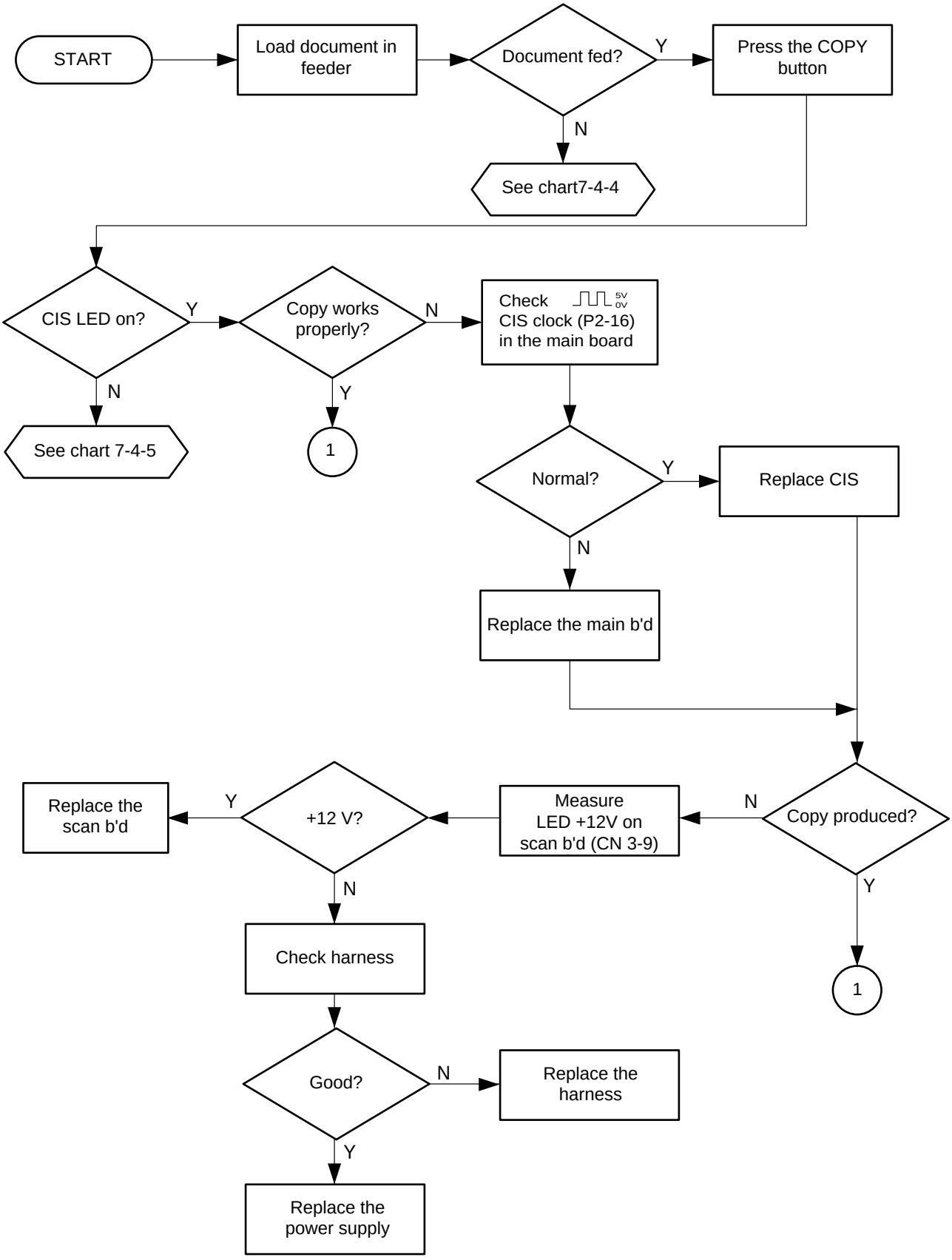
7-4-4 Malfunction on Document Feeding

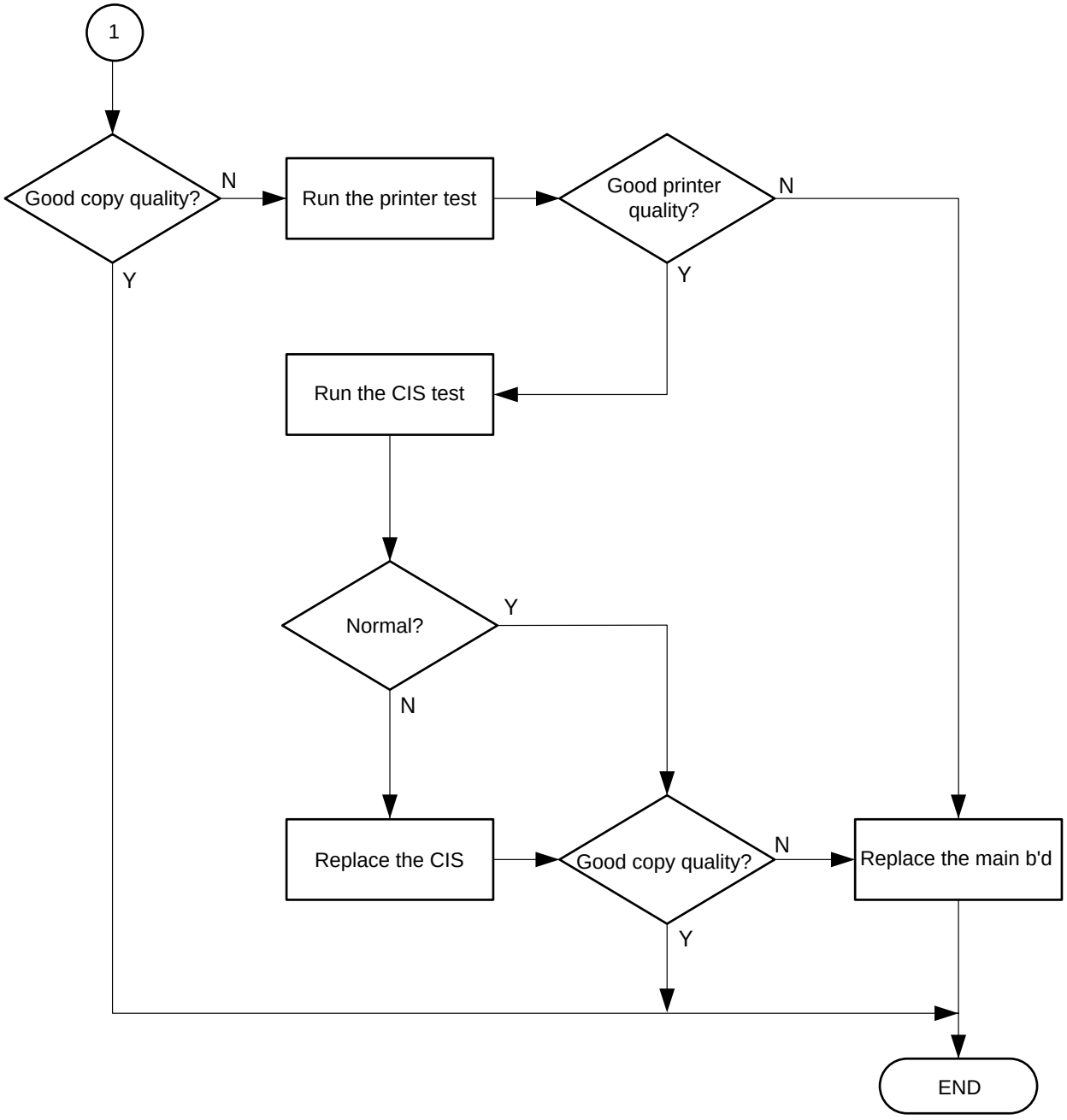


7-4-5 CIS LED Not Lit

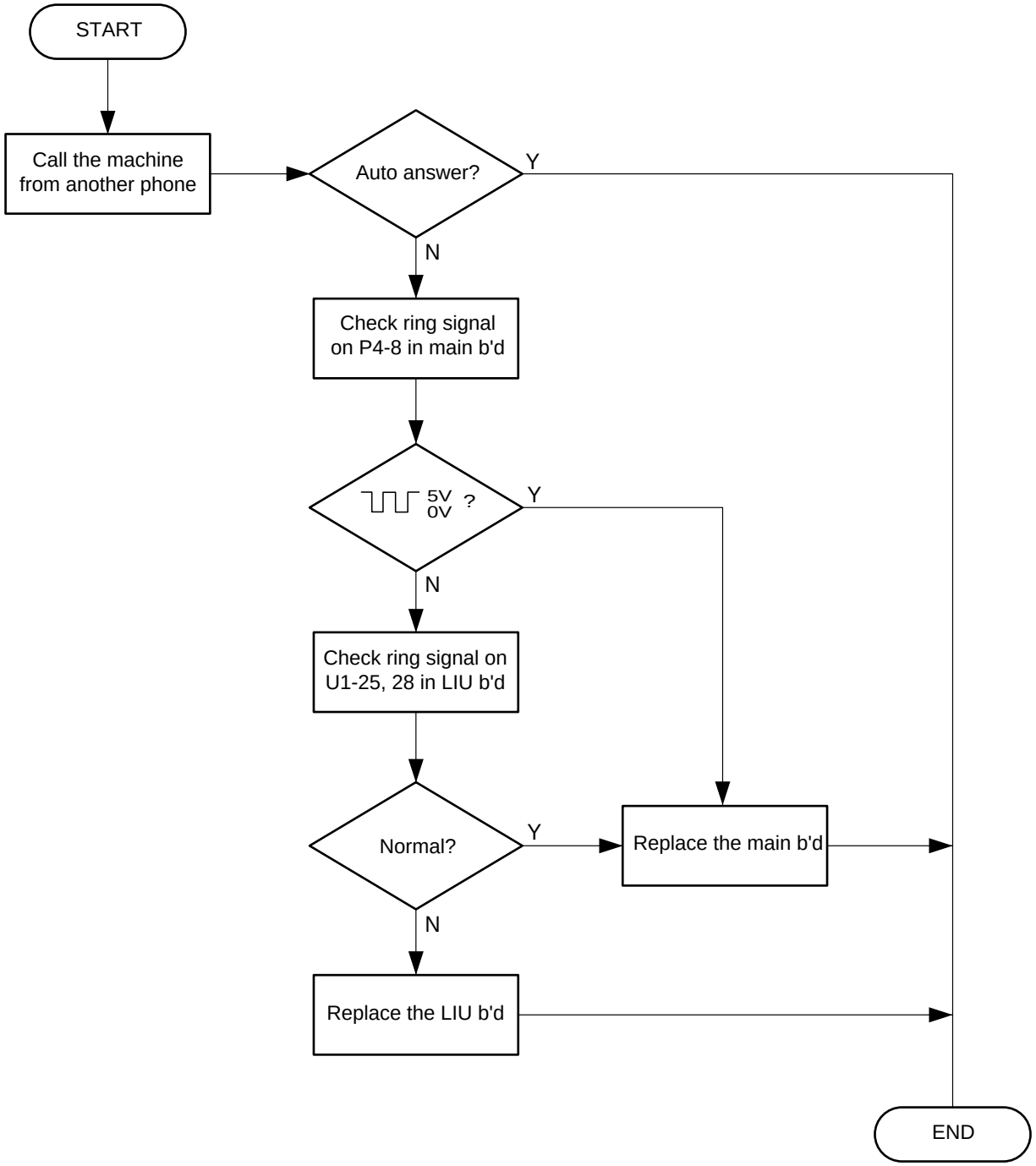


7-4-6 Malfunction on Copy

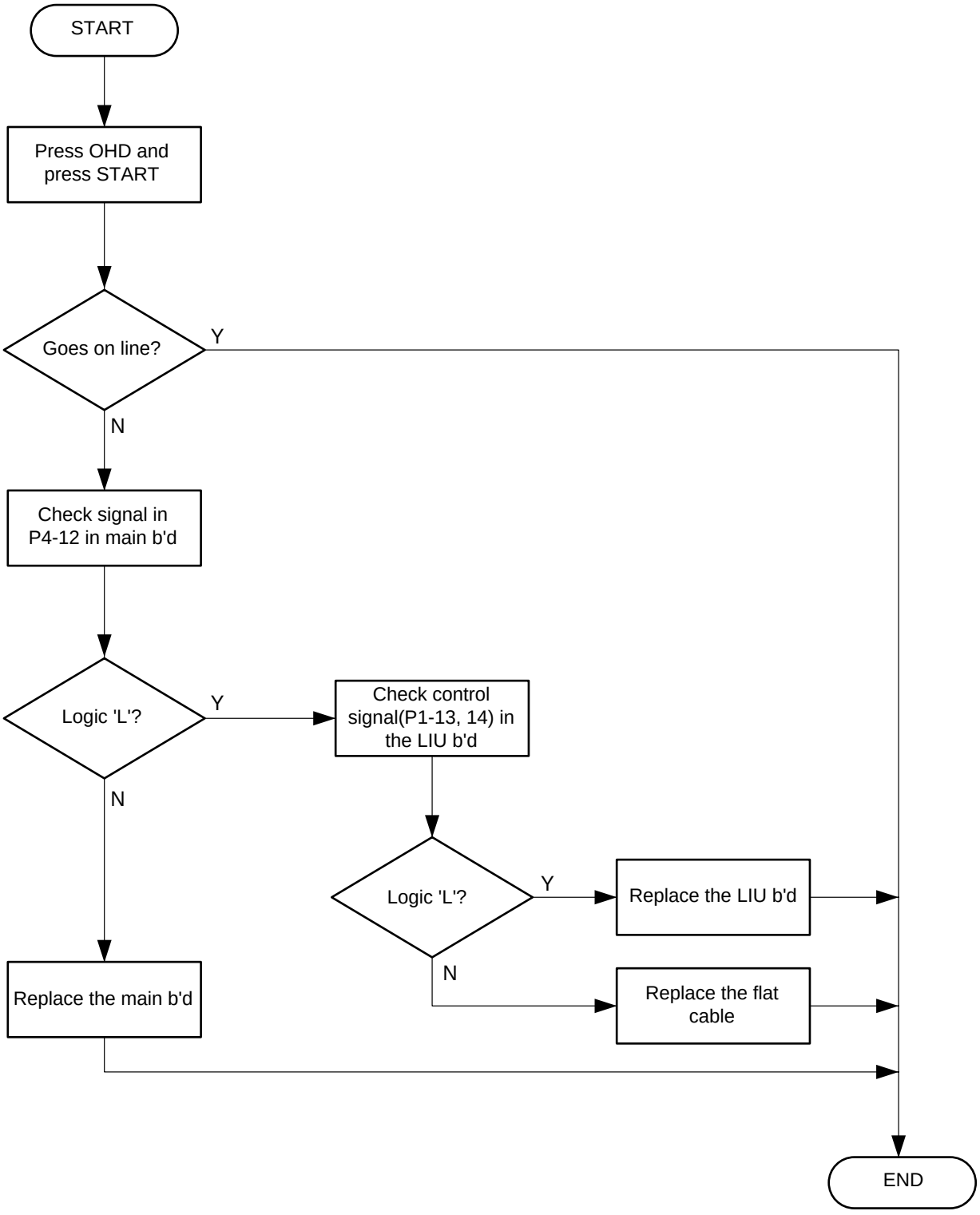



1
Good copy quality?
N
Y
Run the printer test
Good printer quality?
N
Y
Run the CIS test
Normal?
Y
N
Replace the CIS
Good copy quality?
N
Y
Replace the main b'd
END

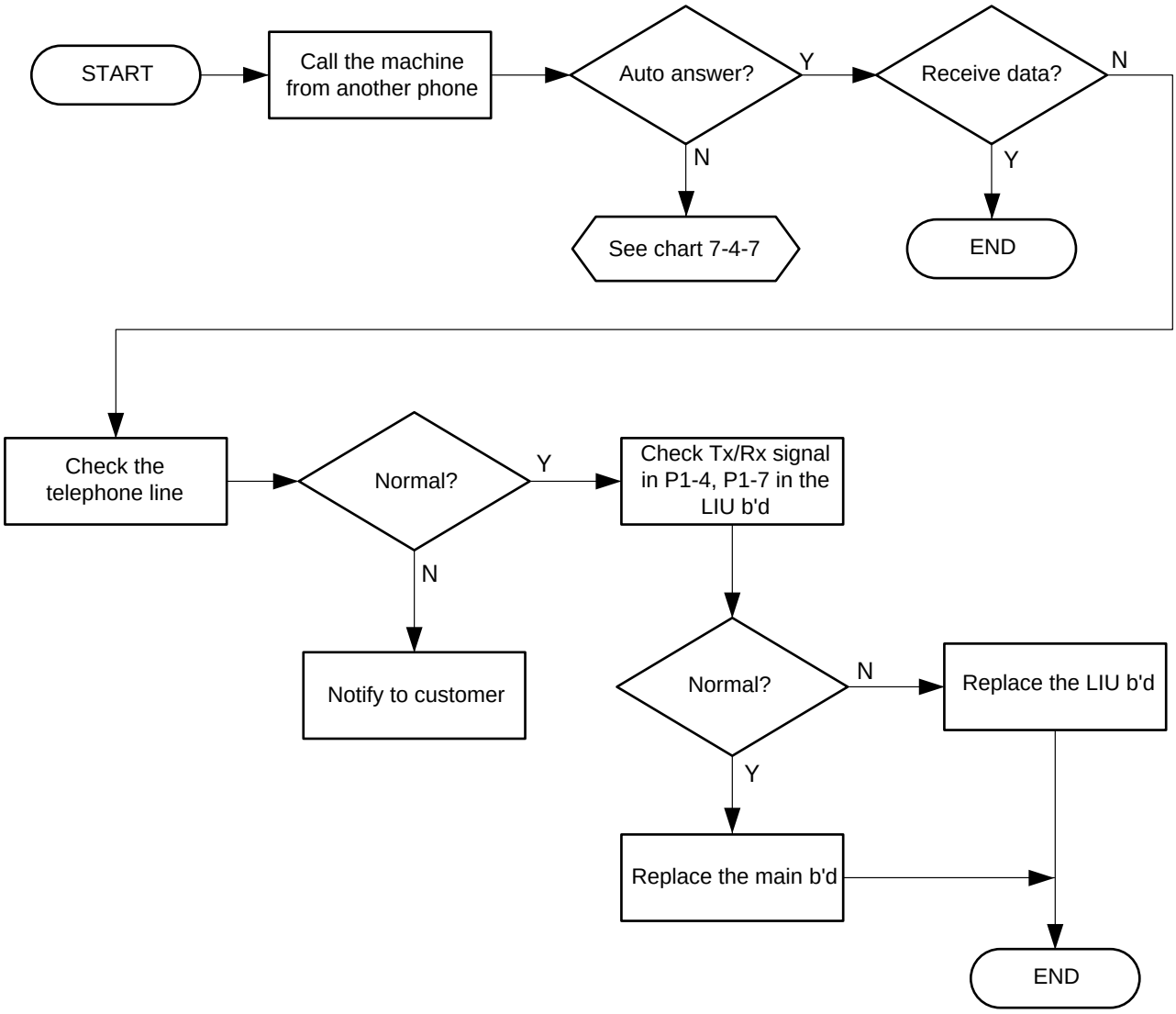
7-4-7 Malfunction in Auto Answer



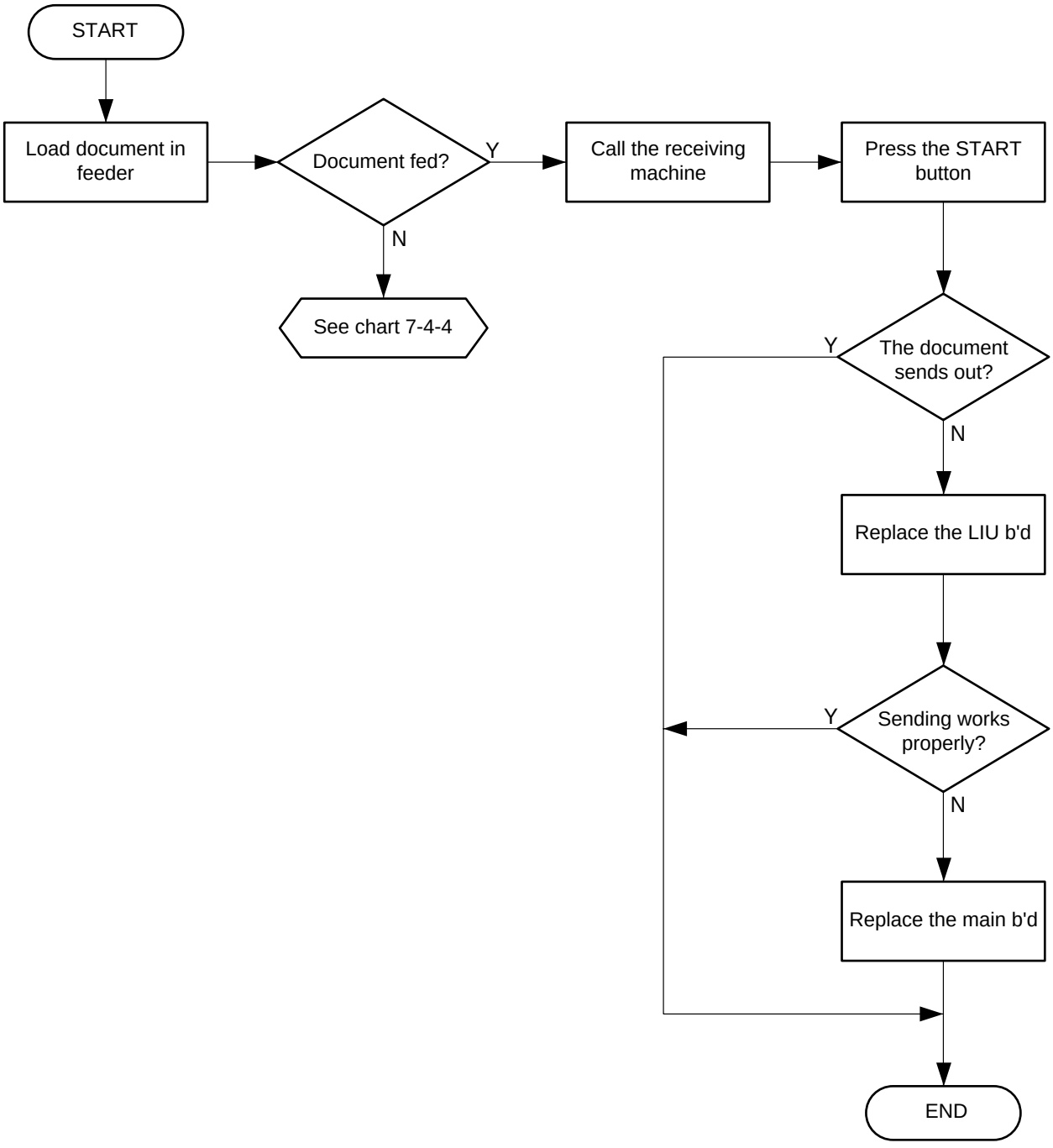
7-4-8 Malfunction in Manual Receiving



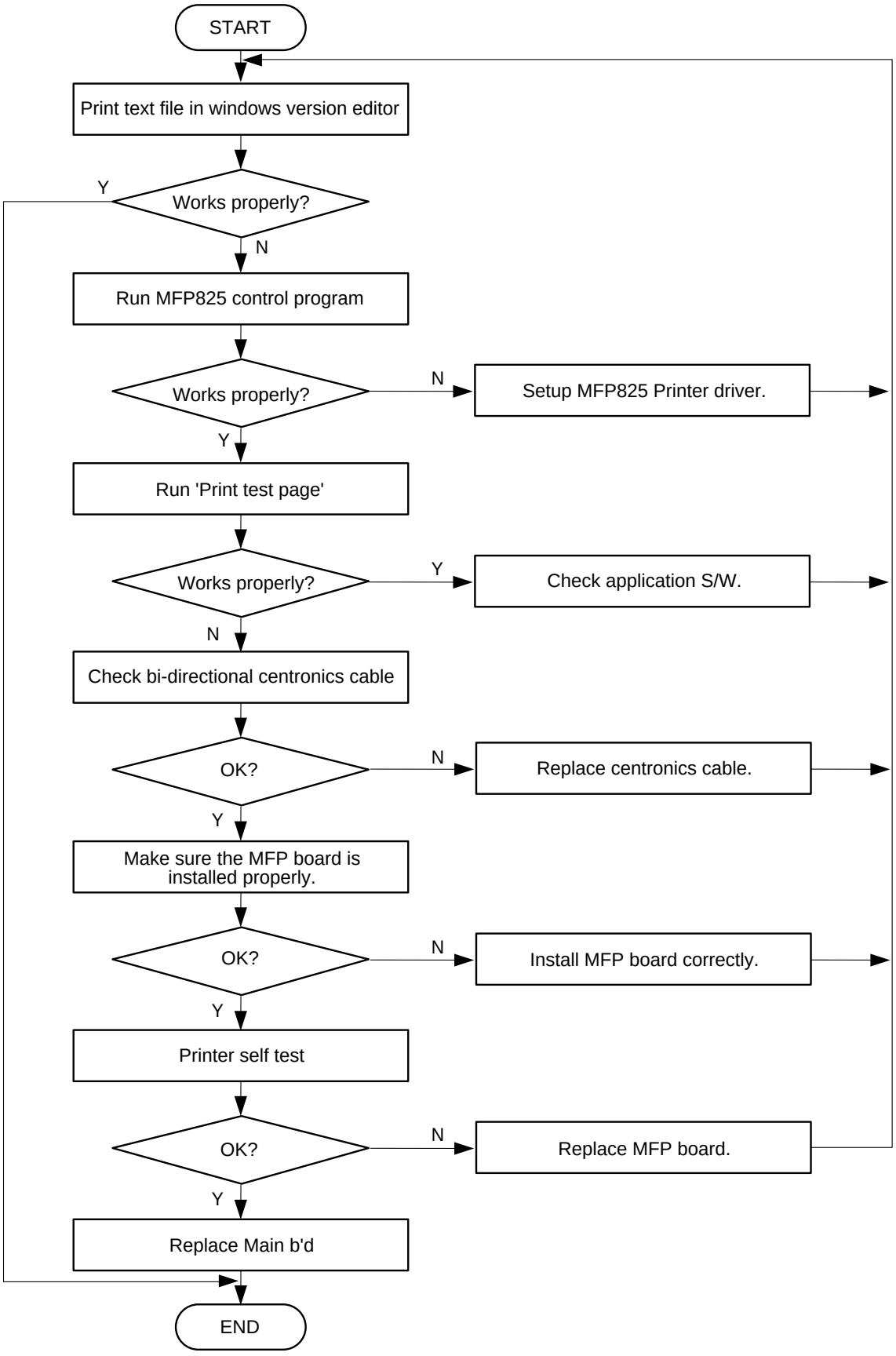
7-4-9 Malfunction in Automatic Receiving



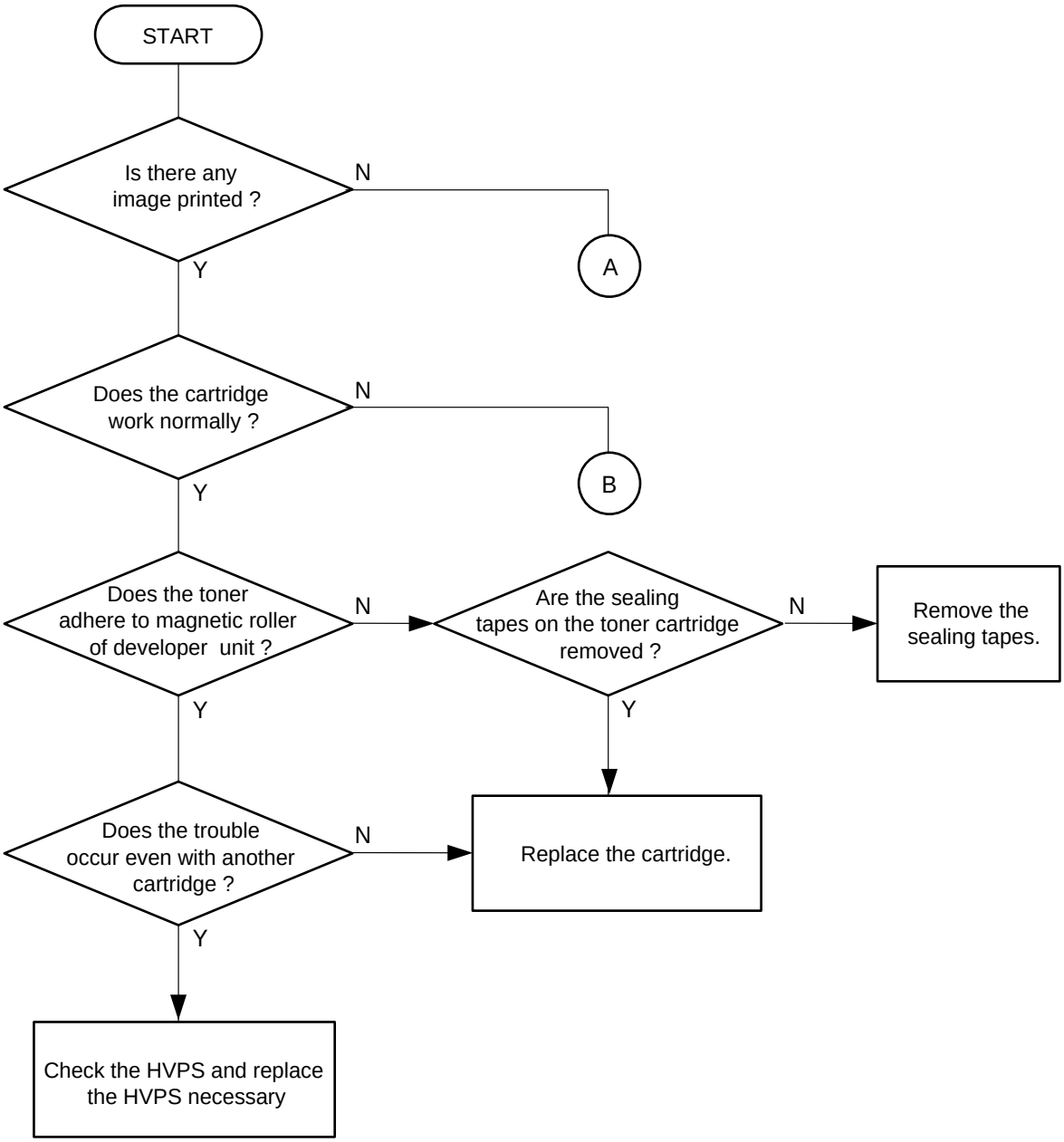
7-4-10 Malfunction in Transmission

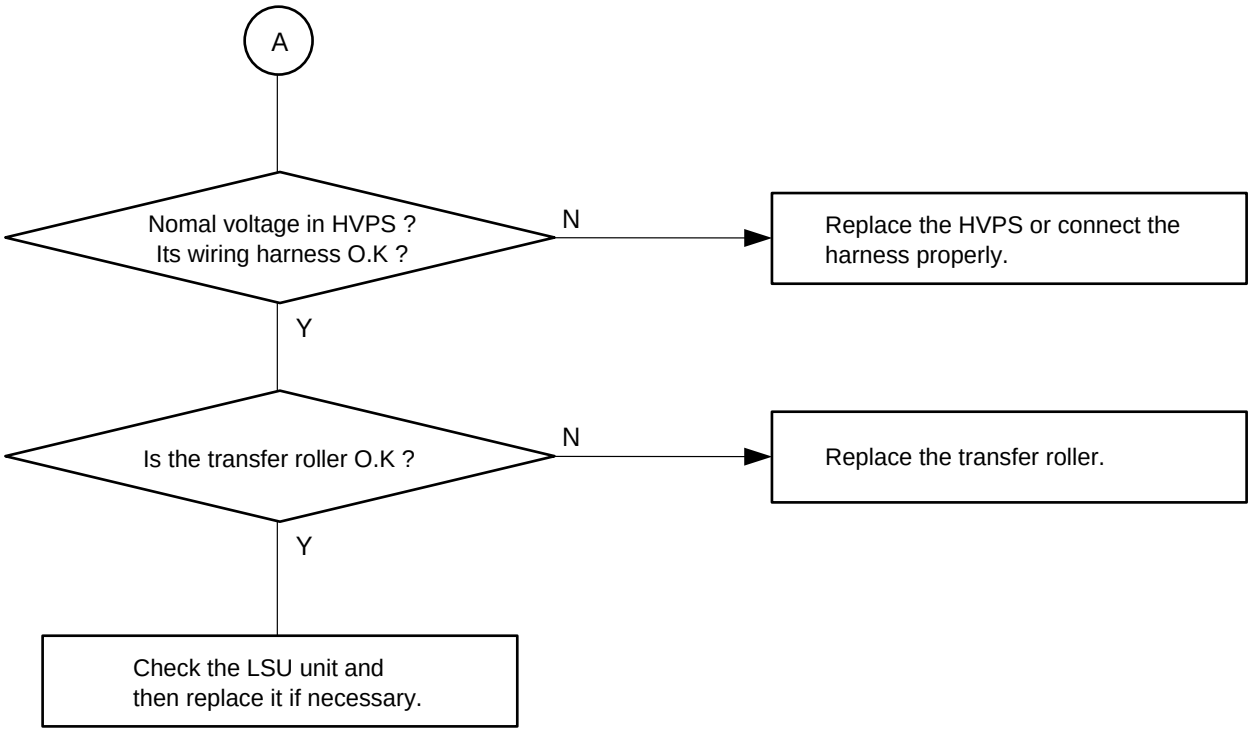


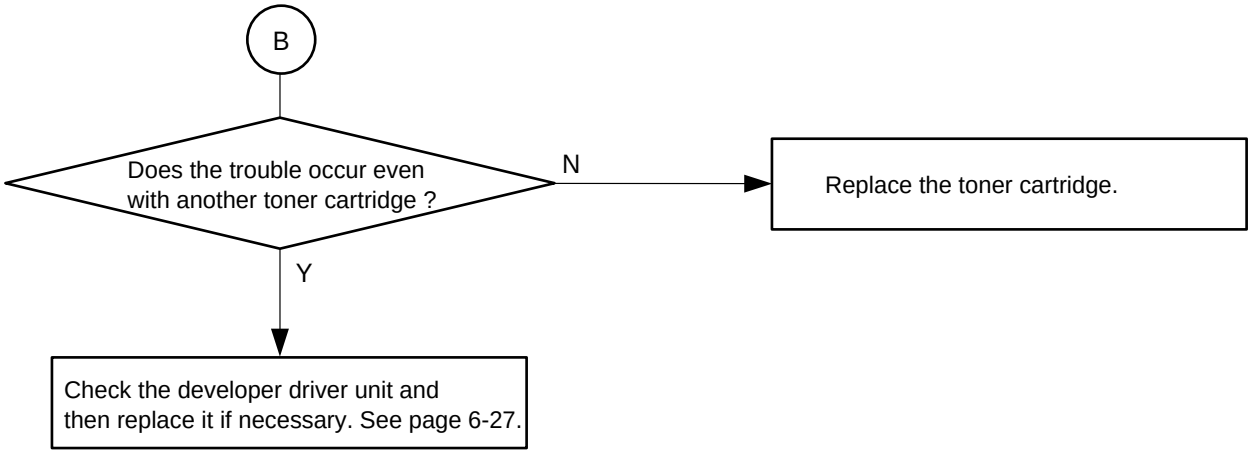
7-4-11 Malfunction in PC Printing



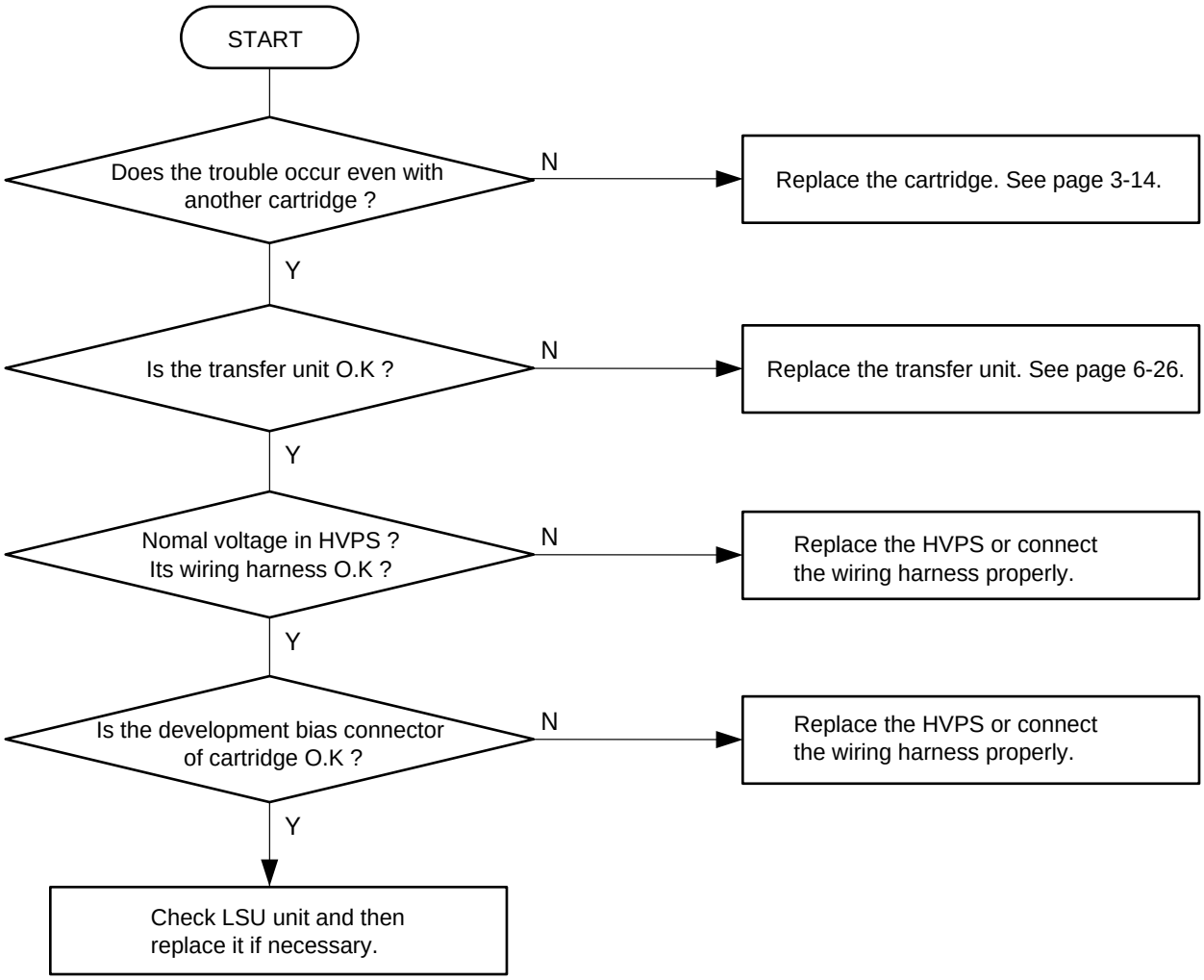
7-4-12 No Paper of the Image (All white printed)



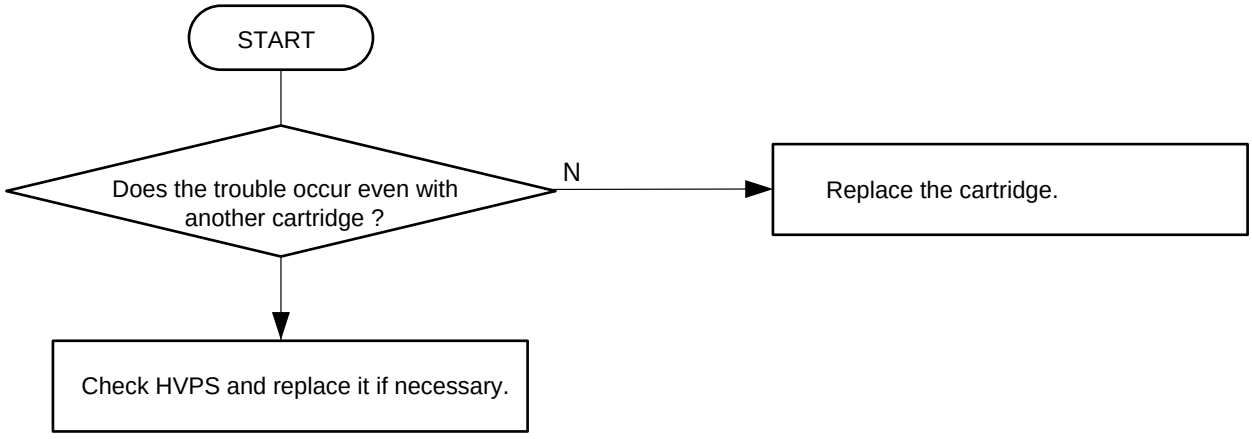

A
Nomal voltage in HVPS ?
Its wiring harness O.K ?
N
Replace the HVPS or connect the harness properly.
Y
Is the transfer roller O.K ?
N
Replace the transfer roller.
Y
Check the LSU unit and
then replace it if necessary.


B
Does the trouble occur even
with another toner cartridge ?
N
Replace the toner cartridge.
Y
Check the developer driver unit and
then replace it if necessary. See page 6-27.

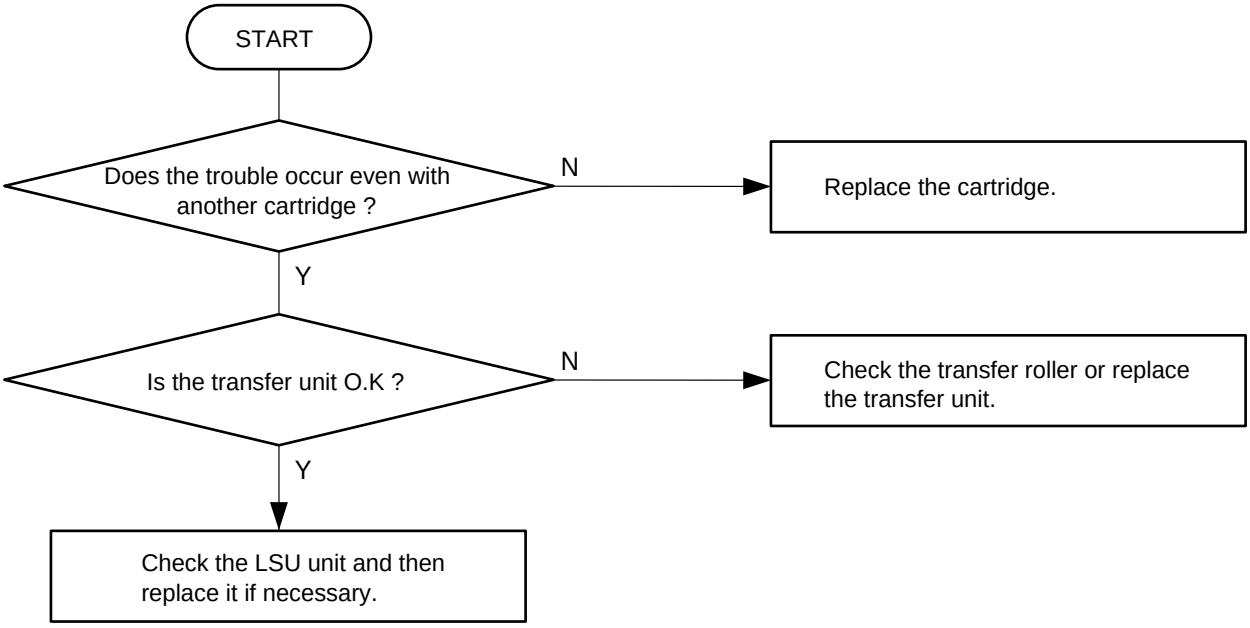
7-4-13 Pale/Weak Image Quality


START
Does the trouble occur even with another cartridge ?
N
Replace the cartridge. See page 3-14.
Y
Is the transfer unit O.K ?
N
Replace the transfer unit. See page 6-26.
Y
Nomal voltage in HVPS ? Its wiring harness O.K ?
N
Replace the HVPS or connect the wiring harness properly.
Y
Is the development bias connector of cartridge O.K ?
N
Replace the HVPS or connect the wiring harness properly.
Y
Check LSU unit and then replace it if necessary.

7-4-14 High Background Density (Toner in the background areas)

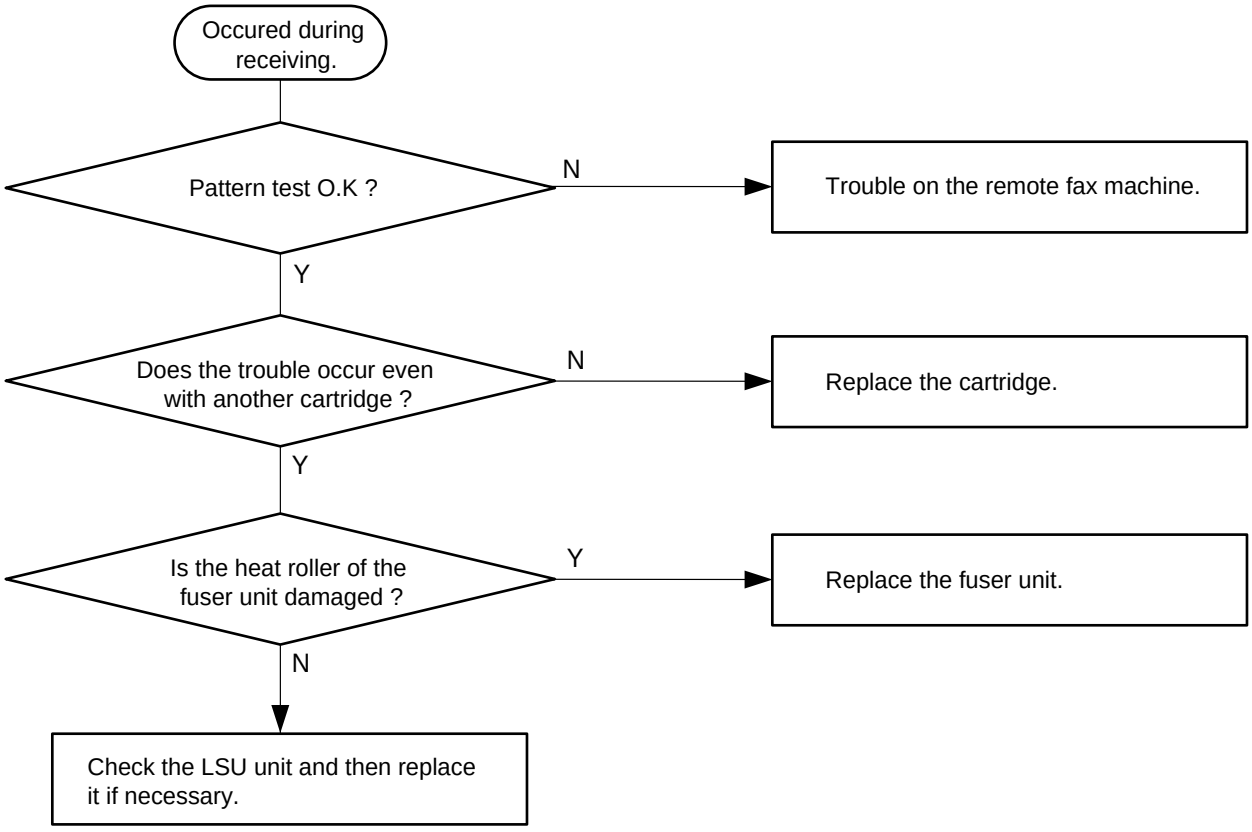

START
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Check HVPS and replace it if necessary.

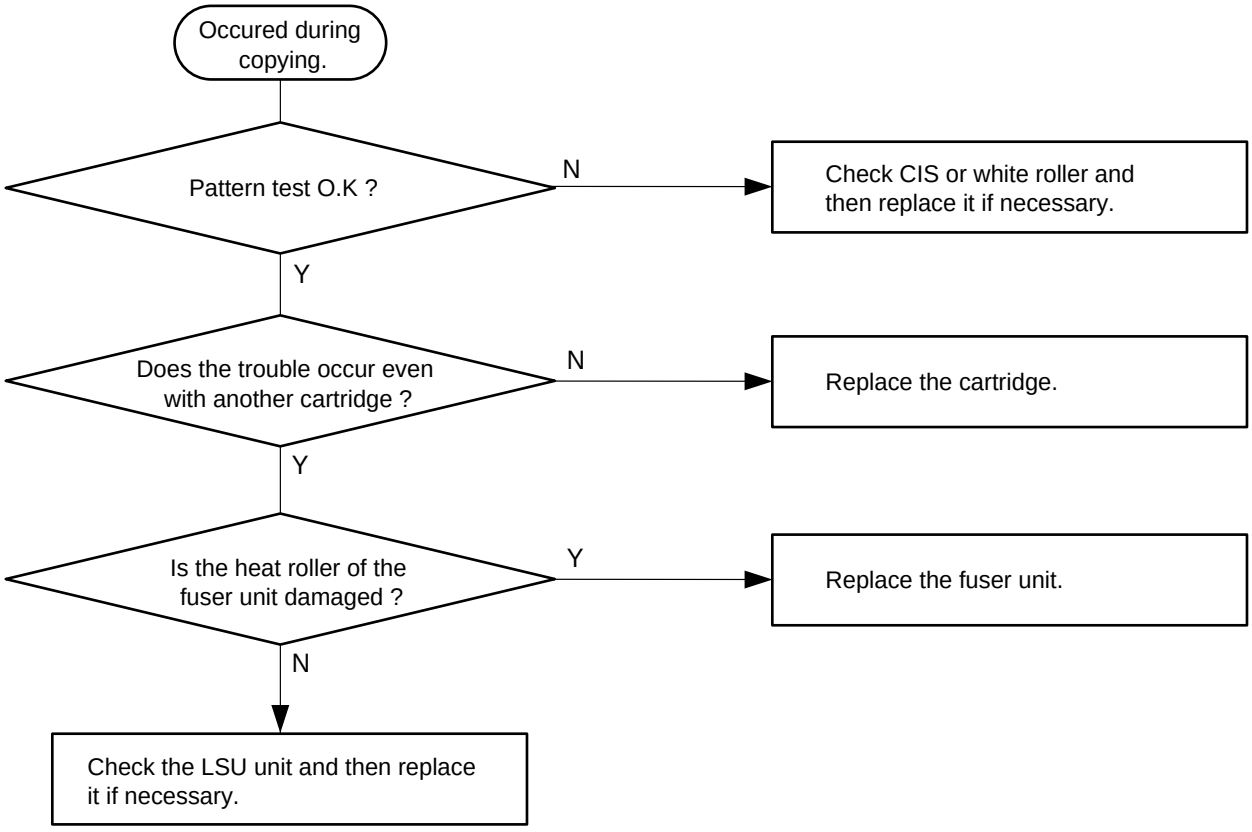
7-4-15 Uneven Density


START
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Y
Is the transfer unit O.K ?
N
Check the transfer roller or replace the transfer unit.
Y
Check the LSU unit and then replace it if necessary.

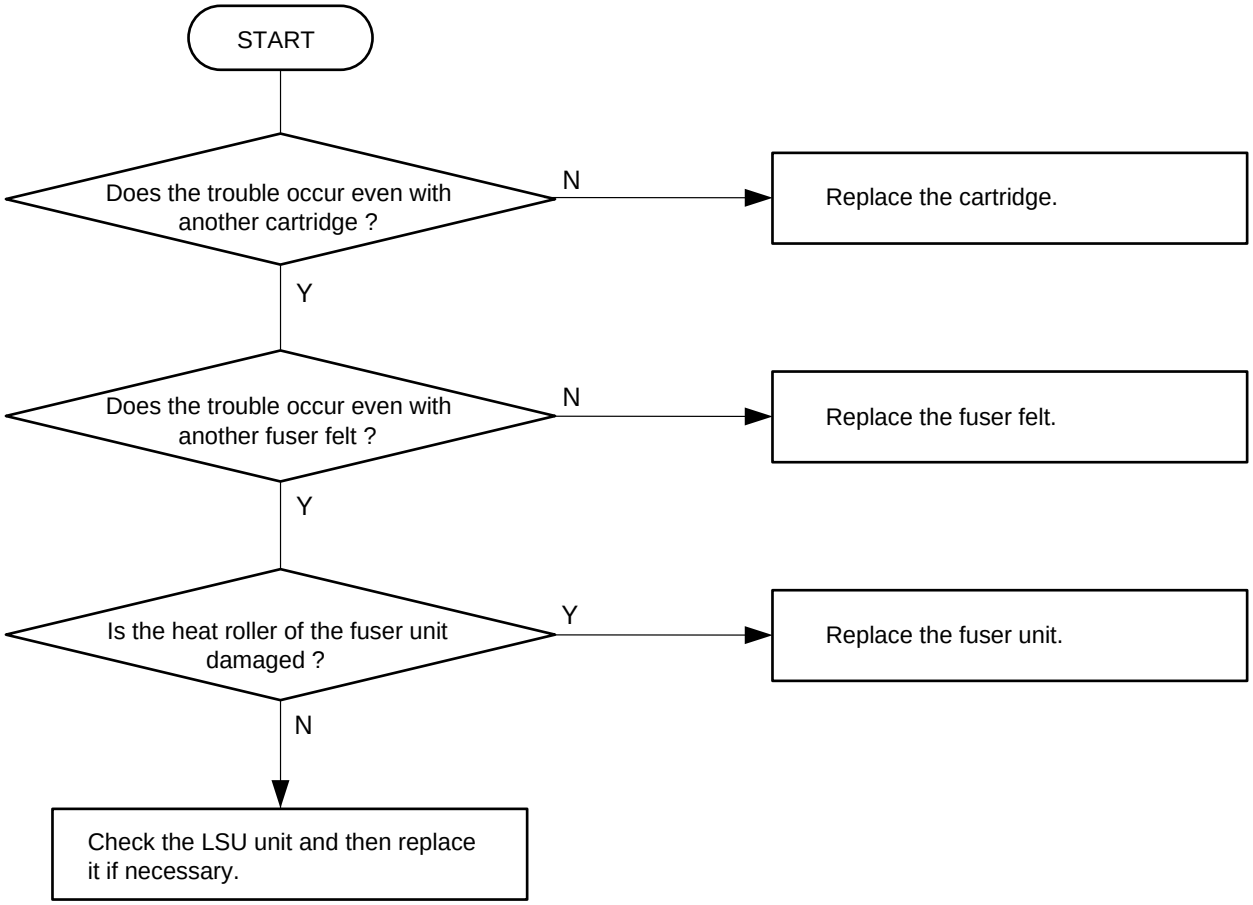
7-4-16 All Black Printed

7-4-17 Black Vertical Line

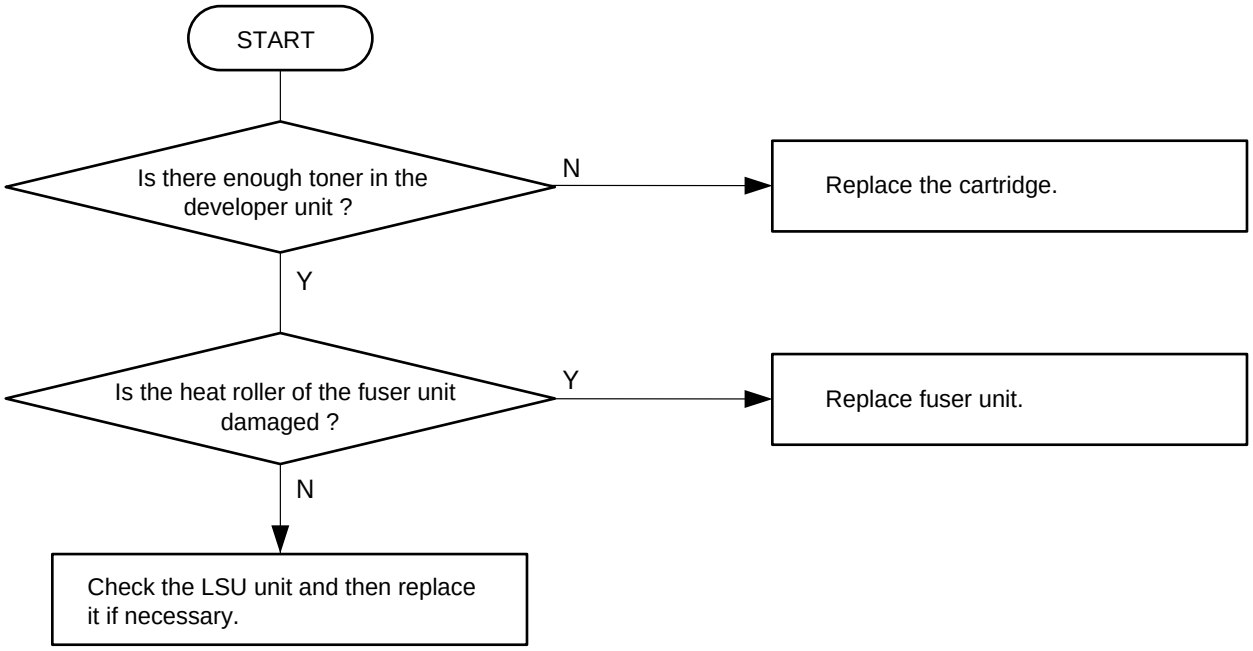



Occured during copying.
Pattern test O.K ?
N
Check CIS or white roller and then replace it if necessary.
Y
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Y
Is the heat roller of the fuser unit damaged ?
Y
Replace the fuser unit.
N
Check the LSU unit and then replace it if necessary.

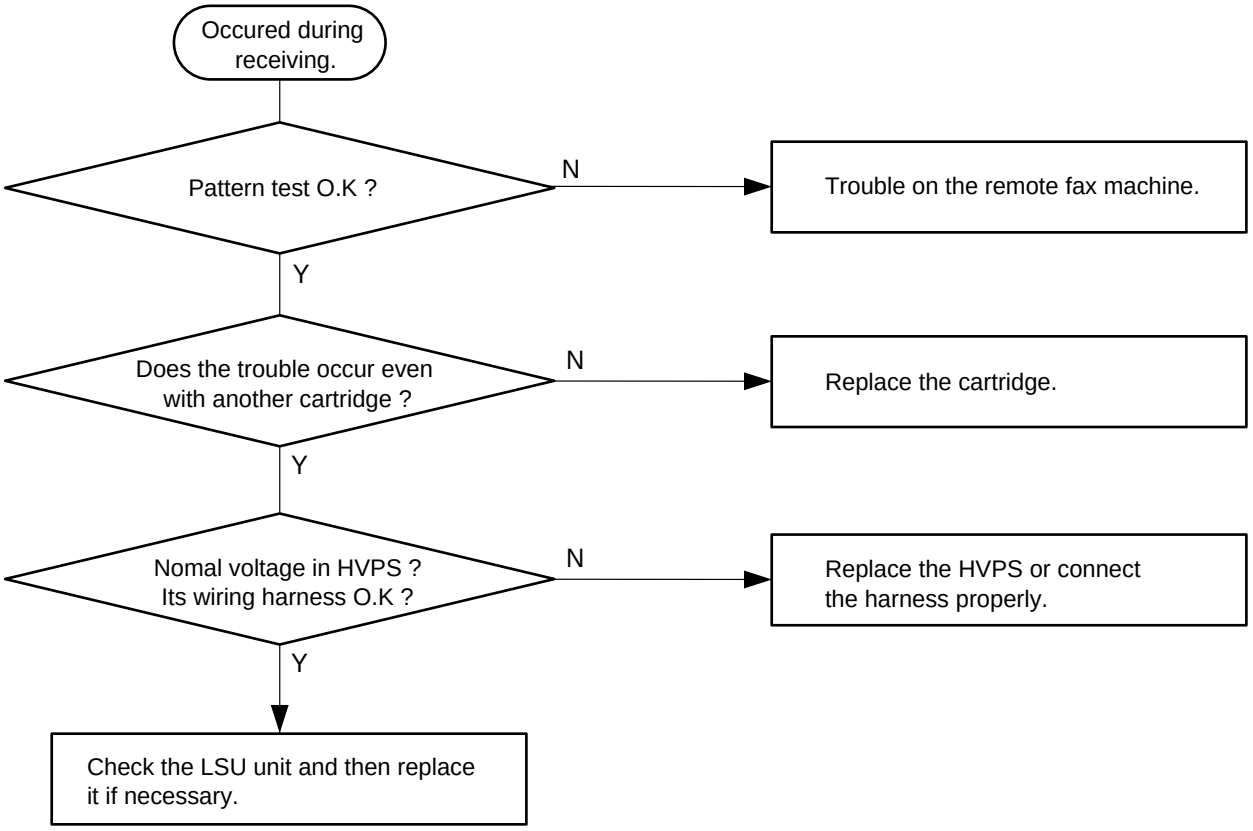
7-4-18 Black Horizontal Line

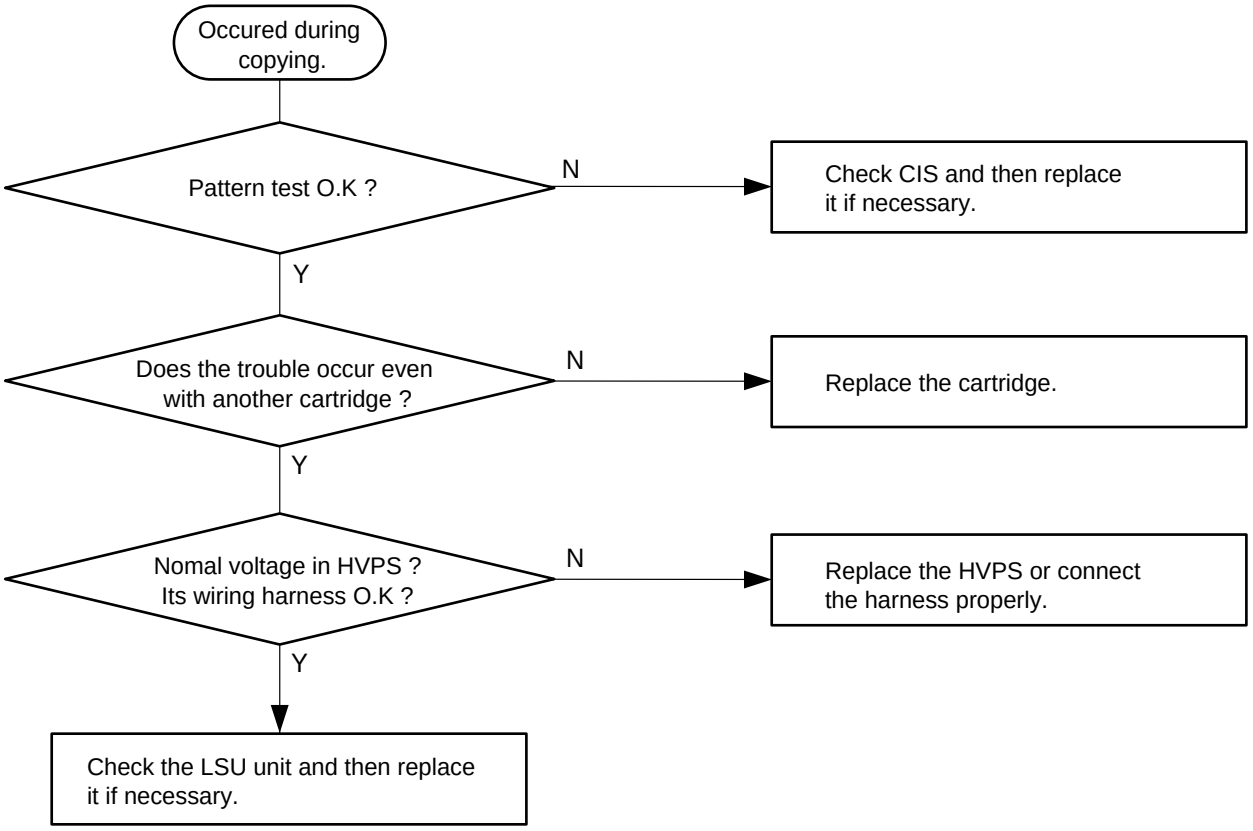

START
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Y
Does the trouble occur even with another fuser felt ?
N
Replace the fuser felt.
Y
Is the heat roller of the fuser unit damaged ?
Y
Replace the fuser unit.
N
Check the LSU unit and then replace it if necessary.

7-4-19 White Vertical Line

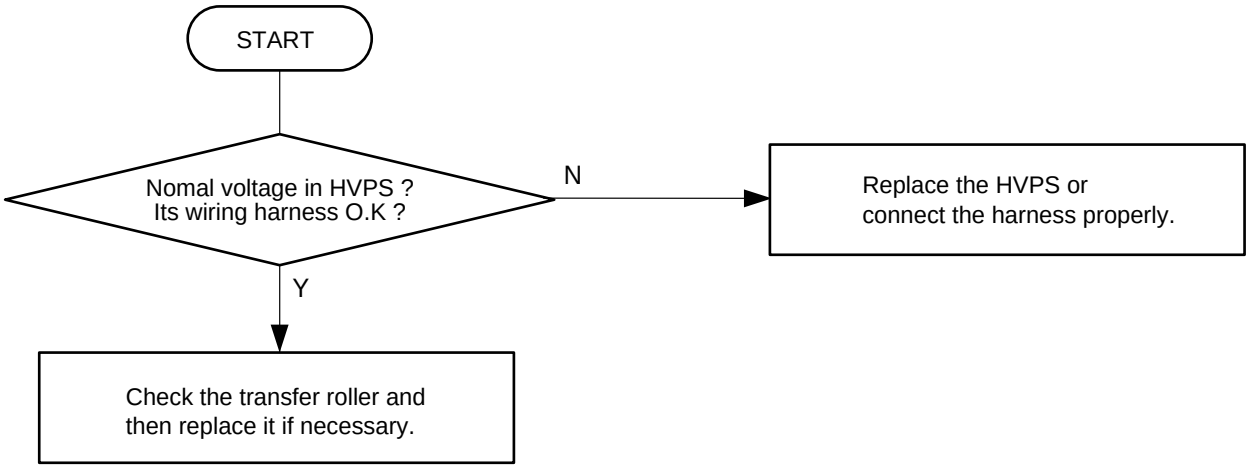

START
Is there enough toner in the developer unit ?
N
Replace the cartridge.
Y
Is the heat roller of the fuser unit damaged ?
Y
Replace fuser unit.
N
Check the LSU unit and then replace it if necessary.

7-4-20 All Black Printed


Occured during receiving.
Pattern test O.K ?
N
Trouble on the remote fax machine.
Y
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Y
Nomal voltage in HVPS ? Its wiring harness O.K ?
N
Replace the HVPS or connect the harness properly.
Y
Check the LSU unit and then replace it if necessary.

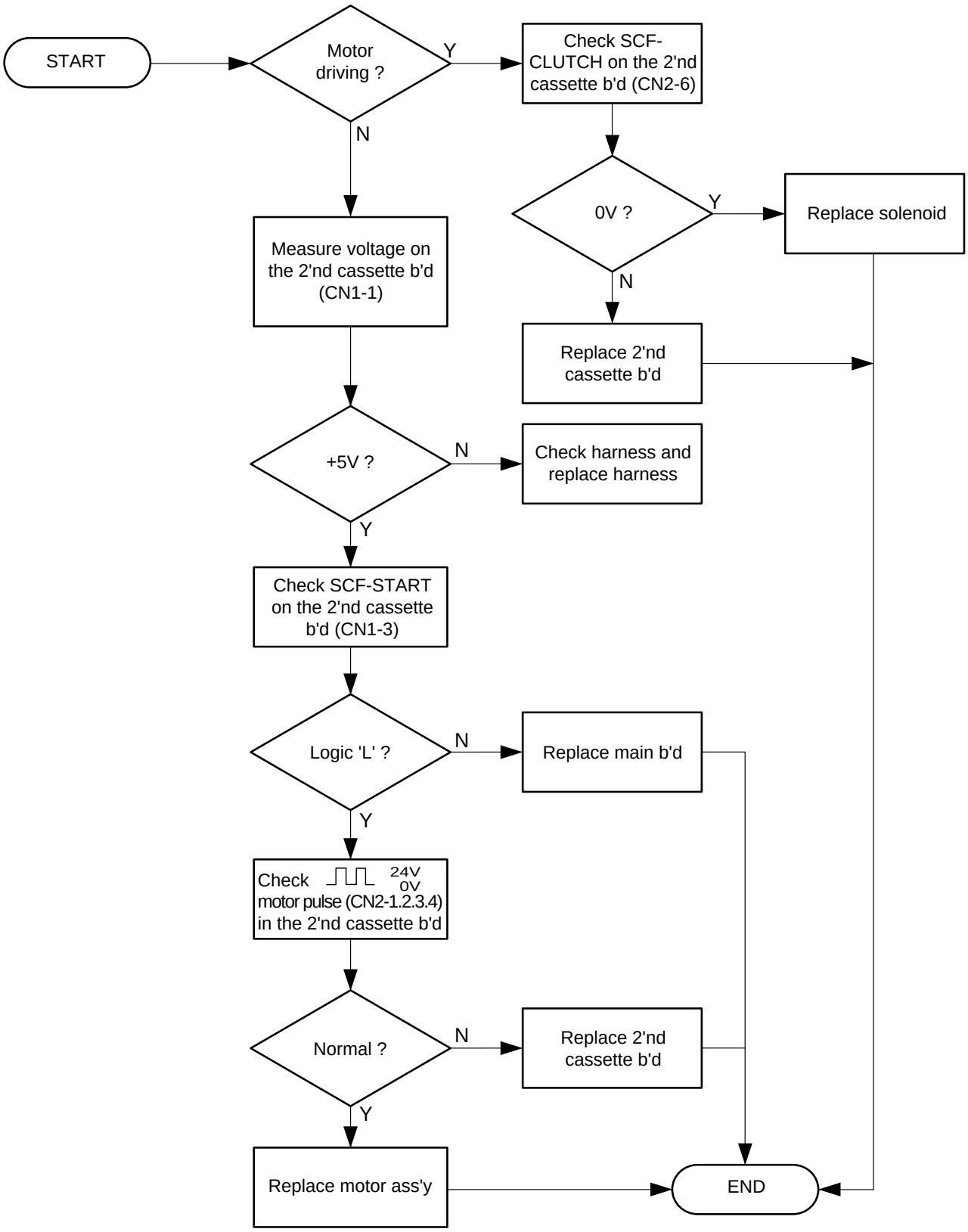

Occured during copying.
Pattern test O.K ?
N
Check CIS and then replace it if necessary.
Y
Does the trouble occur even with another cartridge ?
N
Replace the cartridge.
Y
Nomal voltage in HVPS ? Its wiring harness O.K ?
N
Replace the HVPS or connect the harness properly.
Y
Check the LSU unit and then replace it if necessary.

7-4-21 Avoid the Image



7-4-22 Second Paper Cassette (Option)

MALFUNCTION ON PAPER FEEDING



8. Electrical Parts List

8-1 Main PBA

NO	DESCRIPTION	CODE	REMARK
	PBA MAIN:FX6050EL,STA,USA	JG92-01025B	
PRA AUTO(XL)	PRA AUTO-AUTO:FX6050EL,ST	JG94-01036A	
U25	IC-ASIC:SF5500,STL6120B,Q	JG13-10051A	
U13	IC-ASIC:SF6000,F591204APJ	JG13-10060A	
U34	IC-ASIC:SF6000,LINK203,QF	JG13-10061A	
MAIN PCB	PCB-MAIB PCB:FX6050EL,FR-	JG41-10093B	
D8,9,11,15,18,19,1	DIODE-SWITCHING:MMSD914T1	0401-000116	
D4,D5	DIODE-SCHOTTKY:RB420D,25V	0404-000112	
D17	DIODE-SCHOTTKY:RB160L-40	0404-000115	
D2,3,6,7,10,12-14,16	DIODE-ARRAY:DA204K,20V,10	0407-001008	
Q3,4	TR-SMALL SIGNAL:KSC1623-Y	0501-000342	
U3	TR-ARRAY:ULN2003L,NPN,7,1	0506-000182	
U5,8,48	IC-CMOS LOGIC:7S00,NAND G	0801-000792	
U49,50	IC-CMOS LOGIC:74HCT32,OR	0801-000891	
U18	IC-MICROCONTROLLER:32FX16	0903-000139	
U11	IC-MICROPROCESSOR:32FX200	0903-000193	
U4	IC-REAL TIME CLOCK:6355,1	0909-000106	
U37	IC-ANALOG SWITCH:MC14051B	1001-000170	
U21,45	IC-ANALOG SWITCH:MC14053B	1001-000171	
U10,15	IC-DRAM:48C2100C,2Mx8BIT	1105-001185	
U46	IC-MODEM,R288FV34	1205-001421	
U6,12	IC-SRAM:62256B,32Kx8BIT,S	1106-000197	
U35	IC-SRAM:6264,8KX8BIT,SOP	1106-000273	
U27	IC-AUDIO AMP:34119,SOP,8P	1201-000105	
U16	IC-OP AMP:82,SOP,8P,150MI	1201-000178	
U17	IC-OP AMP:318,SOP,8P,150M	1201-000289	
U26,28,42	IC-OP AMP:4558,SOP,8P,150	1201-000423	
U29	IC-VOLTAGE COMP.:393,SOP	1202-000164	
R122,123	R-CHIP:68Kohm,5%,1/10W,DA	2007-000001	
R116,120	R-CHIP:75Kohm,5%,1/10W,DA	2007-000002	
R66,159,242-245,274	R-CHIP:120ohm,5%,1/10W,DA	2007-000023	
R10,11,20,21,160	R-CHIP:200ohm,5%,1/10W,DA	2007-000026	
R183-188,190-192,268	R-CHIP:200ohm,5%,1/10W,DA	2007-000026	
R282	R-CHIP:200ohm,5%,1/10W,DA	2007-000026	
R19,182,189,200,201	R-CHIP:0ohm,5%,1/10W,DA,T	2007-000029	
R289,315	R-CHIP:0ohm,5%,1/10W,DA,T	2007-000029	

NO	DESCRIPTION	CODE	REMARK
R218-223,228-240	R-CHIP:0ohm,5%,1/10W,DA,T	2007-000029	
R202-209,L18,L20	R-CHIP:0ohm,5%,1/10W,DA,T	2007-000029	
L6,15	R-CHIP:0ohm,5%,1/8W,DA,TP	2007-000033	
R193	R-CHIP:1.5Kohm,5%,1/10W,D	2007-000241	
R12,13,15,28,50,87	R-CHIP:100Kohm,5%,1/10W,D	2007-000282	
R154	R-CHIP:100Kohm,5%,1/10W,D	2007-000282	
R152,195-198,241,261	R-CHIP:100ohm,5%,1/10W,DA	2007-000290	
R257,271,277,313,314	R-CHIP:100ohm,5%,1/10W,DA	2007-000290	
R5,17,24,45,60	R-CHIP:10Kohm,5%,1/10W,DA	2007-000300	
R64,67,69,71,106	R-CHIP:10Kohm,5%,1/10W,DA	2007-000300	
R117,260	R-CHIP:10Kohm,5%,1/10W,DA	2007-000300	
R309,311,287	R-CHIP:10Kohm,5%,1/10W,DA	2007-000300	
R26	R-CHIP:10Mohm,5%,1/10W,DA	2007-000304	
R165	R-CHIP:150Kohm,5%,1/10W,D	2007-000395	
R22,148-150,163,247	R-CHIP:150ohm,5%,1/10W,DA	2007-000401	
R248	R-CHIP:150ohm,5%,1/10W,DA	2007-000401	
R119,285	R-CHIP:17.4Kohm,1%,1/10W	2007-000435	
R161,164,169,170,171	R-CHIP:180ohm,5%,1/10W,DA	2007-000449	
R249-251,R61	R-CHIP:180ohm,5%,1/10W,DA	2007-000449	
R14,77,133,144,280	R-CHIP:1Kohm,5%,1/10W,DA	2007-000468	
R253-256	R-CHIP:1Kohm,5%,1/10W,DA	2007-000468	
R168,180,181	R-CHIP:1Kohm,5%,1/10W,DA	2007-000468	
R272,273,292,293	R-CHIP:1Kohm,5%,1/10W,DA	2007-000468	
R262,263	R-CHIP:1Mohm,5%,1/10W,DA	2007-000477	
R25,85,86,146,291	R-CHIP:2.2Kohm,5%,1/10W,D	2007-000493	
R105,128	R-CHIP:20Kohm,5%,1/10W,DA	2007-000546	
R157,166	R-CHIP:220Kohm,5%,1/10W,D	2007-000565	
R43,55,301	R-CHIP:220ohm,5%,1/10W,DA	2007-000572	
R102,264	R-CHIP:2Kohm,5%,1/10W,DA,	2007-000671	
R9,132	R-CHIP:3.9Kohm,1%,1/10W,D	2007-000707	
R110,L5	R-CHIP:300ohm,5%,1/10W,DA	2007-000728	
R104	R-CHIP:30Kohm,5%,1/10W,DA	2007-000738	
R27,91	R-CHIP:330Kohm,5%,1/10W,D	2007-000757	
R300,303	R-CHIP:33ohm,5%,1/10W,DA	2007-000781	
R59	R-CHIP:390ohm,5%,1/10W,DA	2007-000822	
R18	R-CHIP:39Kohm,5%,1/10W,DA	2007-000830	

NO	DESCRIPTION	CODE	REMARK
R99,266	R-CHIP:3Kohm,5%,1/10W,DA	2007-000844	
R44	R-CHIP:3ohm,5%,1/10W,DA,T	2007-000849	
R4,29-32,34-42,51-54	R-CHIP:4.7Kohm,5%,1/10W,D	2007-000872	
R113,121,153,167,173	R-CHIP:4.7Kohm,5%,1/10W,D	2007-000872	
R175,177,179,194,258	R-CHIP:4.7Kohm,5%,1/10W,D	2007-000872	
R259,269,275,276	R-CHIP:4.7Kohm,5%,1/10W,D	2007-000872	
R101,158	R-CHIP:470ohm,5%,1/10W,DA	2007-000931	
R16,100	R-CHIP:47Kohm,5%,1/10W,DA	2007-000941	
R1-R3,R6-R8	R-CHIP:47Kohm,5%,1/10W,DA	2007-000941	
R145	R-CHIP:6.2Kohm,5%,1/10W,D	2007-001055	
R267	R-CHIP:620ohm,5%,1/10W,DA	2007-001092	
R142	R-CHIP:62ohm,5%,1/10W,DA	2007-001100	
R278	R-CHIP:68.1Kohm,1%,1/10W	2007-001107	
R302	R-CHIP:68ohm,5%,1/10W,DA	2007-001133	
R73	R-CHIP:7.5Kohm,5%,1/10W,D	2007-001141	
R312	R-CHIP:750ohm,5%,1/10W,DA	2007-001155	
R103	R-CHIP:8.2Kohm,5%,1/10W,D	2007-001177	
R286	R-CHIP:137Kohm,1%,1/10W,D	2007-007159	
C1-3,6,9,10,12,16,17	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C24,26,29,30,38,40	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C42-44,47,48,50,52	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C54,55,66-68,70-72	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C75,78,81,83,87	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C93,96,97	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C99,101,139,208-210	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C147-149,216,233	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C178,179,152	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C175,180,236,238,239	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C234,235,103	C-CERAMIC,CHIP:100nF,+80-	2203-000192	
C14,15,146,167	C-CERAMIC,CHIP:100pF,5%,5	2203-000239	
C200,35-37,237	C-CERAMIC,CHIP:100pF,5%,5	2203-000239	
C170,176	C-CERAMIC,CHIP:100pF,5%,5	2203-000239	
C151	C-CERAMIC,CHIP:10nF,10%,5	2203-000260	
C114,169,214,215	C-CERAMIC,CHIP:120pF,5%,5	2203-000316	
C225	C-CERAMIC,CHIP:150pF,5%,5	2203-000361	
C7,56,63	C-CERAMIC,CHIP:1nF,5%,50V	2203-000455	
C135-137,150,156	C-CERAMIC,CHIP:1nF,5%,50V	2203-000455	
C172,173,174,177	C-CERAMIC,CHIP:1nF,5%,50V	2203-000455	

NO	DESCRIPTION	CODE	REMARK
C168	C-CERAMIC,CHIP:1uF,+80-20	2203-000476	
C144	C-CERAMIC,CHIP:2.2nF,10%,	2203-000499	
C4,5	C-CERAMIC,CHIP:220pF,5%,5	2203-000595	
C223	C-CERAMIC,CHIP:22pF,5%,50	2203-000634	
C8,110-113	C-CERAMIC,CHIP:30pF,5%,50	2203-000748	
C18,140	C-CERAMIC,CHIP:330pF,5%,5	2203-000784	
C19,28,73,115-123	C-CERAMIC,CHIP:470pF,5%,5	2203-000953	
C125,132,142,143,145	C-CERAMIC,CHIP:470pF,5%,5	2203-000953	
C158-160,165,166	C-CERAMIC,CHIP:470pF,5%,5	2203-000953	
C171	C-CERAMIC,CHIP:470pF,5%,5	2203-000953	
C49	C-CERAMIC,CHIP:4pF,0.25pF	2203-001022	
C128,129,130,131	C-CERAMIC,CHIP:680pF,5%,5	2203-001132	
C79,161,162	C-CERAMIC,CHIP:68nF,10%,2	2203-001142	
C224	C-CERAMIC,CHIP:68pF,5%,50	2203-001158	
C163	C-CERAMIC,CHIP:75pF,5%,50	2203-001193	
C53,59	C-CERAMIC,CHIP:15pF,5%,50	2203-001517	
C74,82	C-AL,SMD:10uF,20%,35V,GP	2402-000117	
C85	C-AL,SMD:1uF,20%,50V,GP,T	2402-000122	
C202,203,204,205	C-AL,SMD:22uF,20%,16V,-,5	2402-000135	
C227,228	C-AL,SMD:22uF,20%,16V,-,5	2402-000135	
C11	C-AL,SMD:100uF,20%,16V,-,	2402-000168	
C164	C-AL,SMD:33uF,20%,35V,-,-	2402-000172	
C77	C-AL,SMD:4.7uF,20%,35V,-,	2402-000173	
C13,229	C-AL,SMD:10uF,20%,16V,GP	2402-000176	
C25,219	C-TA,CHIP:10uF,20%,10V,-	2404-000283	
L1,2,7	INDUCTOR-SMD:390uH,10%,3.	2703-000204	
L23,24,L21,R147	CORE-FERRITE BEAD:AB,3.2x	3301-000370	
U47	FREQ-ATTENUATOR:5-80MHz,1	4701-001020	
Q2	TR-SMALL SIGNAL:KSC5019-M	0501-000385	
S1	PHOTO-INTERRUPTER:TR,-,-	0604-001006	
Q1	IC-VOLTAGE COMP.:520,TO-9	1202-000159	
Y4	CRYSTAL-UNIT:20MHz,50ppm	2801-000199	
Y1	CRYSTAL-UNIT:32.768KHz,5p	2801-001498	
Y6	CRYSTAL-UNIT:18.1168MHz,5	2801-003266	
Y7	CRYSTAL-UNIT:16.5912MHz,5	2801-003267	
Y2	RESONATOR-CERAMIC:455KHz	2802-000152	
Y8	OSCILLATOR-CLOCK:52.416MH	2804-001182	
Y3	OSCILLATOR-CLOCK:49.152MH	2804-001183	

NO	DESCRIPTION	CODE	REMARK
L12	CORE-FERRITE BEAD:AA,3.5x	3301-000292	
L4,16	CORE-FERRITE BEAD:ZZ,3.5x	3301-000344	
U1-1,U2-1	SOCKET-IC:32P,DIP,SN,2.54	3704-000255	
P4	CONNECTOR-FPC/FC/PIC:14P	3708-000158	
P3	CONNECTOR-SOCKET:40P,2R,2	3710-000490	
JP1	CONNECTOR-HEADER:NOWALL,2	3711-001422	
P1	CONNECTOR-HEADER:NOWALL,2	3711-002003	
P2	CONNECTOR-HEADER:BOX,32P	3711-003136	
BATT1	BATTERY-LI:3V,220mAH,BUTT	4301-000108	
BATT2	BATTERY-NIH(2ND):4.8V,70m	4302-001005	
	PCB	JG41-10093B	

8-2 OPE PBA

NO	DESCRIPTION	CODE	REMARK
	CAPACITORS		
C1	AL.ELEC,10UF/16V,20%	2401-000414	
C2	CERAMIC,100N,25V	2203-000183	
C3	CERAMIC,100P,50V,5%	2203-000242	
C4	CERAMIC,100P,50V,5%	2203-000242	
C5	CERAMIC,100N,25V	2203-000183	
C6	CERAMIC,100N,25V	2203-000183	
C7	CERAMIC,47P,50V,5%	2203-001005	
C8	CERAMIC,47P,50V,5%	2203-001005	
C9	CERAMIC,100N,25V	2203-000183	
C10~C12	CERAMIC,220P,50V,5%	2203-000597	
C13	CERAMIC,100N,25V	2203-000183	
	RESISTORS		
R1	REF-CHIP,200,5%,1/8W	2007-000542	
R3~R8	REF-CHIP,300,5%,1/8W	2007-000730	
R9	REF-CHIP,10,5%,1/8W	2007-000312	
R11	REF-CHIP,200,5%,1/8W	2007-000542	
R12	REF-CHIP,10K,5%,1/8W	2007-000303	
R13	REF-CHIP,22K,5%,1/8W	2007-000589	
R14	REF-CHIP,680,5%,1/8W	2007-001121	
R15	REF-CHIP,10K,5%,1/8W	2007-000303	
R16~R23	REF-CHIP,22K,5%,1/8W	2007-000589	
R24	REF-CHIP,200,5%,1/8W	2007-000542	
R25	REF-CHIP,150,5%,1/8W	2007-000403	
R26	REF-CHIP,300,5%,1/8W	2007-000730	
R27	REF-CHIP,2.2K,5%,1/8W	2007-000496	
R28	REF-CHIP,150,5%,1/8W	2007-000403	
R29	REF-CHIP,10K,5%,1/8W	2007-000303	
	IC's		
U1	NIC-MPU,FOR SF600,MASKING	JF09-10052A	
U3	IC-TTL,SOP,14,150MIL	0803-000884	
	DIODES		
D1~D8	DIODE-REC,SMD,MMD914T1	0401-000116	
LED1	LED,R,CHIP:60MW	0601-000208	
LED2~LED9	LED,G,CHIP:60MW	895-190005GA	
	TRANSISTOR		
Q1	TR-NPN,KSC1623,SOT-23,0.2W	0501-000342	

NO	DESCRIPTION	CODE	REMARK
	MISCELLANEOUS		
J1	REF-CHIP,0,5%,1/8W	911-710007CR	
J5~J17	REF-CHIP,0,5%,1/8W	911-710007CR	
JP1	WIRE,TCWA	3812-000101	
JP3-JP11	WIRE,TCWA	3812-000101	
PCB	OPE PCB	JG41-10088A	
S1	INTERRUPTER,TR	895-610013AA	
S2	PHOTO.TR	0604-001006	
Y1	CRESO,7.37M,0.5%	2802-000185	

8-3 Scan PBA

NO	DESCRIPTION	CODE	REMARK
	PBA SUB :FX6050,STA,USA,-	JG92-00585B	
PRA AUTO	PRA AUTO-AUTO SCAN:FX6050	JG94-00566B	
R14,25,26,40,42-44	R-CHIP:0ohm,5%,1/8W,DA,TP	2007-000033	
R37	R-CHIP:10Kohm,5%,1/8W,DA	2007-000303	
R7,8	R-CHIP:1Kohm,5%,1/8W,DA,T	2007-000472	
R33-36	R-CHIP:4.7Kohm,5%,1/8W,DA	2007-000875	
R1,2	R-CHIP:56Kohm,5%,1/8W,DA	2007-001041	
R38	R-CHIP:750ohm,5%,1/8W,DA	2007-001159	
C7,C8	C-CERAMIC,CHIP:100nF,10%	2203-000208	
C1-4	C-CERAMIC,CHIP:820pF,5%,5	2203-003084	
L1,L2,R3,R4	CORE-FERRITE BEAD:AB,3.2x	3301-000370	
U1,U2	IC-MOTOR DRIVER:PBL3717A	1003-000243	
R9,10	R-CARBON:0.5ohm,5%,1/2W,A	2001-000202	
C11	C-AL:33uF,20%,50V,GP,TP,6	2401-001197	
C6	C-AL:47uF,20%,35V,GP,TP,6	2401-001553	
CN3	CONNECTOR-HEADER:3WALL,10	3711-000398	
CN2	CONNECTOR-HEADER:3WALL,4P	3711-000470	
CN6	CONNECTOR-HEADER:3WALL,6P	3711-000496	
CN7	CONNECTOR-HEADER:BOX	3711-000760	
	PCB	JG41-10091B	

8-4 Mother PBA

NO	DESCRIPTION	CODE	REMARK
	CAPACITORS		
C1	C-CERAMIC ,DISC	2201-000736	
	CONNECTORS		
CN1	CON-BOX HEADER,32P,2,2R,S	3711-003136	
CN2	CON-BOX HEADER,26P,2,2R,S	3711-000778	
CN3	CON-BOX HEADER,20P,2,2R,S	3711-002001	
CN4	CON-3WALL HEADER , 15P	3711-000428	
CN5	C0N-BOX HEADER ,6P	3711-000051	
CN6	C0N-BOX HEADER,5P	3711-003151	
CN7	CON-1WALL,20P,1R,2mm,S	3711-001857	
CN8	CON-NOWALL	70203-0048	
	TRANSISTORS		
Q1	TR-SMALL SIGNAL	0501-000317	
Q2	TR-SMALL SIGNAL	0501-000398	
	PCB		
PCB	MOTHER PCB	JG41-10089A	
	RESISTORS		
R1	R-METAL,10K,1/8W	2004-000222	
R2	REF-CR,1.2K,5%,1/4W	2001-000044	
R3	R-METAL,2.2K,1/8W	2004-000462	

8-5 Mech PBA

NO	DESCRIPTION	CODE	REMARK
	CAPACITORS		
C1	CERAMIC,222K,1H,10%	2203-000499	
C2	CERAMIC,331J,1H,5%	2203-000789	
C3	CERAMIC,331J,1H,5%	2203-000789	
C4	CERAMIC,222K,1H,10%	2203-000499	
C5	CERAMIC,104Z,1E	2203-000183	
C6	CERAMIC,222K,1H,10%	2203-000499	
C7	CERAMIC,222K,1H,10%	2203-000499	
C8	AL.ELEC,336	2401-001197	
	CONNECTORS		
CN1	WALL HEADER,15P,2,STRA	3711-000428	
CN2	WALL HEADER,6P,2,STRA	3711-000496	
CN3	WALL HEADER,2P,2,STRA	3711-000443	
CN4	WALL HEADER,2P,2	3711-000444	
CN5	WALL HEADER ,8P	3711-000517	
	DIODES		
D1	DIODE-REC,SOD-123	0401-000116	
D2	DIODE-REC,SOD-123	0401-000116	
D3	DIODE-REC,EK-04,DO-4	0402-000208	
D4	DIODE-REC,EK-04,DO-4	0402-000208	
	PCB		
PCB	MECH PCB	JG41-10091A	
	RESISTORS		
R1	REF-CHIP,47K,5%,1/8W	2007-000944	
R2	REF-CHIP,47K,5%,1/8W	2007-000944	
R3	REF-CHIP,4.7K,5%,1/8W	2007-000875	
R4	REF-CHIP,4.7K,5%,1/8W	2007-000875	
R5	REF-CHIP,2.4K,5%,1/8W	2007-000513	
R8	REF-CHIP,2.4K,5%,1/8W	2007-000513	
R9	REF-CHIP,620,5%,1/8W	2007-001094	
R10	REF-CHIP,120,5%,1/8W	2007-000346	
R24~R27	REF-CHIP,0,5%,1/8W	911-710007CR	
R31~R34	REF-CHIP,0,5%,1/8W	911-710007CR	
R38	REF,1,2%,2W	2005-000125	
R39	REF,1,2%,2W	2005-000125	
R40	REF-CHIP,0,5%,1/8W	911-710007CR	
R43~R45	REF-CHIP,0,5%,1/8W	911-710007CR	
R47~R49	REF-CHIP,0,5%,1/8W	911-710007CR	
	IC		
U1	IC-LIN,7020,MOTOR DRIVER	1003-000185	

8-6 ECP PBA

NO	DESCRIPTION	CODE	REMARK
	CAPACITORS		
C1	AL.ELEC,107M,1C,SMD	2402-000168	
C2	CERAMIC,22P,5%,1H	2203-000634	
C3	CERAMIC,22P,5%,1H	2203-000634	
C4	CERAMIC,22P,5%,1H	2203-000634	
C5	CERAMIC,22P,5%,1H	2203-000634	
C6	CERAMIC,22P,5%,1H	2203-000634	
C7	CERAMIC,22P,5%,1H	2203-000634	
C8	CERAMIC,22P,5%,1H	2203-000634	
C9	CERAMIC,22P,5%,1H	2203-000634	
C10	CERAMIC,22P,5%,1H	2203-000634	
C11	CERAMIC,22P,5%,1H	2203-000634	
C12	CERAMIC,22P,5%,1H	2203-000634	
C13	CERAMIC,22P,5%,1H	2203-000634	
C14	CERAMIC,22P,5%,1H	2203-000634	
C15	CERAMIC,22P,5%,1H	2203-000634	
C16	CERAMIC,22P,5%,1H	2203-000634	
C17	CHIP,100N,20%,1H	2203-000192	
C18	CHIP,100N,20%,1H	2203-000192	
C19	CHIP,100N,20%,1H	2203-000192	
C20	CERAMIC,22P,5%,1H	2203-000634	
C20	CERAMIC,22P,5%,1H	2203-000634	
C21	CERAMIC,22P,5%,1H	2203-000634	
C22	CERAMIC,22P,5%,1H	2203-000634	
C23	CERAMIC,22P,5%,1H	2203-000634	
C24	CERAMIC,22P,5%,1H	2203-000634	
C25	CERAMIC,22P,5%,1H	2203-000634	
C26	CERAMIC,22P,5%,1H	2203-000634	
C27	CERAMIC,22P,5%,1H	2203-000634	
C28	CERAMIC,22P,5%,1H	2203-000634	
C29	CERAMIC,22P,5%,1H	2203-000634	
C30	CERAMIC,22P,5%,1H	2203-000634	
C31	CERAMIC,22P,5%,1H	2203-000634	
C32	CERAMIC,22P,5%,1H	2203-000634	
C33	CERAMIC,22P,5%,1H	2203-000634	

NO	DESCRIPTION	CODE	REMARK
C34	C-CHIP,100N,20%,1H	2203-000192	
C35	C-CHIP,100N,20%,1H	2203-000192	
C36	C-CHIP,100N,20%,1H	2203-000192	
C37	C-CHIP,100N,20%,1H	2203-000192	
C38	C-CHIP,100N,20%,1H	2203-000192	
C39	C-CHIP,180P,5%,1/10W	2203-000408	
C40	C-CHIP,180P,5%,1/10W	2203-000408	
C41	C-CHIP,180P,5%,1/10W	2203-000408	
C42	C-CHIP,180P,5%,1/10W	2203-000408	
C43	C-CHIP,180P,5%,1/10W	2203-000408	
C44	C-CHIP,180P,5%,1/10W	2203-000408	
C45	C-CHIP,180P,5%,1/10W	2203-000408	
C46	C-CHIP,180P,5%,1/10W	2203-000408	
C47	C-CHIP,180P,5%,1/10W	2203-000408	
C48	C-CHIP,180P,5%,1/10W	2203-000408	
C49	C-CHIP,180P,5%,1/10W	2203-000408	
C50	C-CHIP,180P,5%,1/10W	2203-000408	
C51	C-CHIP,180P,5%,1/10W	2203-000408	
C52	C-CHIP,180P,5%,1/10W	2203-000408	
C53	C-CHIP,180P,5%,1/10W	2203-000408	
C54	C-CHIP,180P,5%,1/10W	2203-000408	
C55	C-CHIP,100N,20%,1H	2203-000192	
C56	C-CHIP,180P,5%,1/10W	2203-000408	
	PCB		
PCB	ECP PCB	JG41-10094A	
	RESISTORS		
R1	REF-CHIP,1K,5%,1/10W	2007-000468	
R2	REF-CHIP,1K,5%,1/10W	2007-000468	
R3	REF-CHIP,1K,5%,1/10W	2007-000468	
R4	REF-CHIP,1K,5%,1/10W	2007-000468	
R5	REF-CHIP,1K,5%,1/10W	2007-000468	
R6	REF-CHIP,1K,5%,1/10W	2007-000468	
R7	REF-CHIP,1K,5%,1/10W	2007-000468	
R8	REF-CHIP,1K,5%,1/10W	2007-000468	
R9	REF-CHIP,1K,5%,1/10W	2007-000468	

NO	DESCRIPTION	CODE	REMARK	
R10	REF-CHIP,1K,5%,1/10W	2007-000468		
R11	REF-CHIP,1K,5%,1/10W	2007-000468		
R12	REF-CHIP,1K,5%,1/10W	2007-000468		
R13	REF-CHIP,1K,5%,1/10W	2007-000468		
R14	REF-CHIP,1K,5%,1/10W	2007-000468		
R15	REF-CHIP,1K,5%,1/10W	2007-000468		
R16	REF-CHIP,1K,5%,1/10W	2007-000468		
R17	REF-CHIP,1K,5%,1/10W	2007-000468		
R18	REF-CHIP,4.7K,5%,1/10W	2007-000872		
R19	REF-CHIP,1K,5%,1/10W	2007-000468		
R20	REF-CHIP,1K,5%,1/10W	2007-000468		
R21	REF-CHIP,1K,5%,1/10W	2007-000468		
R22	REF-CHIP,1K,5%,1/10W	2007-000468		
R23	REF-CHIP,1K,5%,1/10W	2007-000468		
R24	REF-CHIP,1K,5%,1/10W	2007-000468		
R25	REF-CHIP,1K,5%,1/10W	2007-000468		
R26	REF-CHIP,1K,5%,1/10W	2007-000468		
R27	REF-CHIP,1K,5%,1/10W	2007-000468		
R28	REF-CHIP,1K,5%,1/10W	2007-000468		
R29	REF-CHIP,1K,5%,1/10W	2007-000468		
R30	REF-CHIP,1K,5%,1/10W	2007-000468		
R31	REF-CHIP,1K,5%,1/10W	2007-000468		
R32	REF-CHIP,4.7K,5%,1/10W	2007-000872		
R33	REF-CHIP,10K,5%1/10W	2007-000300		
R34	REF-CHIP,10K,5%1/10W	2007-000300		
R35	REF-CHIP,10K,5%1/10W	2007-000300		
R36	REF-CHIP,10K,5%1/10W	2007-000300		
R37	REF-CHIP,10K,5%1/10W	2007-000300		
R38	REF-CHIP,10K,5%1/10W	2007-000300		
R39	CHIP,47,5%,1/10W	2007-000947		
R40	CHIP,47,5%,1/10W	2007-000947		
R41	CHIP,47,5%,1/10W	2007-000947		
R42	CHIP,47,5%,1/10W	2007-000947		
R43	CHIP,47,5%,1/10W	2007-000947		
R44	CHIP,47,5%,1/10W	2007-000947		
R45	CHIP,47,5%,1/10W	2007-000947		
R46	CHIP,47,5%,1/10W	2007-000947		

NO	DESCRIPTION	CODE	REMARK
R47	CHIP,47,5%,1/10W	2007-000947	
R48	CHIP,47,5%,1/10W	2007-000947	
R49	CHIP,47,5%,1/10W	2007-000947	
R50	CHIP,47,5%,1/10W	2007-000947	
R51	CHIP,47,5%,1/10W	2007-000947	
R52	CHIP,47,5%,1/10W	2007-000947	
R53	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R54	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R55	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R56	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R57	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R58	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R59	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R60	CHIP,47,5%,1/10W	2007-000947	
R61	CHIP,47,5%,1/10W	2007-000947	
R62	CHIP,47,5%,1/10W	2007-000947	
R63	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R64	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R65	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R66	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R67	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R68	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R69	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R70	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R71	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R72	REF-CHIP,1K,5%,1/10W	2007-000468	
R73	REF-CHIP,4.7K,5%,1/10W	2007-000872	
R74	REF-CHIP,4.7K,5%,1/10W	2007-000872	
	IC's		
U1	IC-TTL	0803-000580	
U2	IC-INTERFACE	1205-001051	
U3	IC- 74LS245,	0803-001173	
	MISCELLANEOUS		
P1	CON-NOWALL,40P,2,2R,ST	3711-003152	
P2	CON-MICRO RIBBON,36P,RECEPTABLE	3702-001001	

8-7 Hook PBA

NO	DESCRIPTION	CODE	REMARK
	MISCELLANEOUS		
P1	CON-WALL HEADER,7P,2,STRA	3711-000503	
PCB	HOOK PCB	JG41-10090A	
SW1	SWITCH-HOOK,3P3T	3409-000127	

8-8 Miscellaneous

NO	DESCRIPTION	CODE	REMARK
	MISCELLANEOUS		
CIS	CONTACT IMAGE SENSOR	0609-001030	
COVER OPEN	MICRO SWITCH	3405-000152	
FUSER OPEN	MICRO SWITCH	3405-000152	
HVPS	POWER UNIT(HVPS)	JG44-10052A	
LCD	LCD,16X2 LINE	JG07-20050A	
MANUAL	PHOTO INTERRUPTER	0604-001021	
P_EMPTY	PHOTO INTERRUPTER	0604-001020	
P_EXIT	PHOTO INTERRUPTER	0604-001015	
PICK_UP	PHOTO INTERRUPTER	0604-001022	
SMPS	POWER UNIT	JG44-10054A	
SPEAKER	AUDIO-SPEAKER	3001-000214	
TX_MOTOR	TX STEPING MOTOR	3101-001007	
RX_MOTOR	RX STEPING MOTOR	3101-001004	
LSU	LASER SCAN UNIT	JG59-10001A	
SOLENOID	UNIT-SOLENOID	JG59-10002A	

8-9 Wire-Harness

NO	DESCRIPTION	PART NAME	CODE	REMARK
	MISCELLANEOUS			
CBF	14PIN FLAT ,60MM	MAIN-LIU	JG39-40169A	
CBF	14PIN FLAT CABLE HARNESS	OPE-LCD(60MM)	JG39-40164A	
CBF	6PIN WIRE HARNESS	OPE-SCAN	JG39-40129A	
CBF	10PIN WIRE HARNESS	MJ-LIU	JG39-40150A	
CBF	6PIN LINE HARNESS	H0OK-MJ	JG39-50504A	
CBF	4PIN LINE HARNESS	CRADLE-MJ	JG39-50503A	
CBF	SCAN EARTH WIRE	SCAN GND	JG39-40010A	
CBF	15PIN WIRE HARNESS	MOTHER-MECH	JG39-40149A	
CBF	32PIN WIRE HARNESS	MAIN-MOTHER(H)	JG39-40147A	
CBF	26PIN WIRE HARNESS	MAIN-MOTHER(L)	JG39-40148A	
CBF	20PIN WIRE HARNESS	MOTHER-SCAN	JG39-40146A	
CBF	10PIN WIRE HARNESS	SCAN-CIS	JG39-40145A	
CBF	CBF-WIRE, MOTOR DRIVE GND	MOTOR DRIVE GND	JG39-40166A	
CBF	CBF-WIRE, MOT GND	MOD GND	JG39-40142A	
CBF	CBF-WIRE, FEED GND	FEED GND	JG39-40153A	
CBF	HVPS WIRE	CC-WIRE	JG39-40143A	
CBF	HVPS WIRE	TC-WIRE	JG39-40143A	
CBF	HVPS WIRE	BIAS-WIRE	JG39-40143A	
CBF	EARTH WIRE	OPC ERTH WIRE	JG39-40141A	
CBF	EARTH WIRE	FUSER EARTH WIRE	JG39-40155A	
CBF	2PIN WIRE HARNESS	COVER S/W	JG39-40131A	
CBF	2PIN WIRE HARNESS	SPEAKER	JG39-40130A	
CBF	2PIN WIRE HARNESS	FUSER	JG39-40137A	
CBF	EARTH WIRE	MOT GROUND	JG39-40142A	
CBF	EARTH WIRE	FEED GROUND	JG39-40153A	
CBF	EARTH WIRE	UPPER EARTH WIRE	JG39-40138A	
CBF	POWER WIRE	INLET-SMPS	JG39-40139A	
CBF	PRINT CABLE	*	JG39-40135A	
CBF	CURL CORD	JF39-60001A	JF39-60001A	
CBF	LINE CORD	955-316014AACK	JF39-50094A	
CBF	POWER CORD	DR4SVT-DS2	JF39-40692A	

8-10 SMPS PBA

NO	DESCRIPTION	PART NAME	VENDOR	REMARK
	CAPACITORS			
C1	XAP-X,275V 224	PCX2 335 224 KNB1530-224	PILKOR ISKRA	
C2	XAP-X,275V 224	PCX2 335 224 KNB1530-224	PILKOR ISKRA	
C3	XAP-X,275V 104	PCX2 335 104 KNB1530-104	PILKOR ISKRA	
C4	CAP-Y,AC400V 222M	HCYE2G222MAA SCE2G222M	SEMCO SAMWHA	
C5	CAP-Y,AC400V 222M	HCYE2G222MAA SCE2G222M	SEMCO SAMWHA	
C6	CAP-Y,AC400V 222M	HCYE2G222MAA SCE2G222M	SEMCO SAMWHA	
C7	ELEC,25*30 105 °C	KMG400V100uF	SAMYOUNG SAMHWA	
C8	M.F, 400V 104K	MMW400V104K TM2G104K	DONGSUNG SAMHWA	
C10	M.F, 400V 104K	MMW400V104K TM2G104K	DONGSUNG SAMHWA	
C11	CERAMIC,1KV 471	CKR3A471K06BS HCYE3A471KB	SAMHWA SEMCO	
C12	MYLAR,100V 223J 50V 223J	TY2A223J TS1H223J	SAMHWA SAMHWA	
C13	MYLAR,100V 223J 50V 223J	TY2A223J TS1H223J	SAMHWA SAMHWA	
C14	MYLAR,100V 223J 50V 223J	TY2A223J TS1H223J	SAMHWA SAMHWA	
C15	CERAMIC,1KV 471	CKR3A471K06BS HCYE3A471KB	SAMHWA SEMCO	
C16	ELEC,12.5*30, 105°C	SXE35V1000uF RX35V1000uF	SAMYOUNG SAMHWA	
C18	ELEC,10*20 105°C	SXE35V330uF RX35V330uF	SAMYOUNG SAMHWA	
C19	CERAMIC,50V 104Z	CCYV1H104ZB CGF1H104ZFK	SEMCO SAMHWA	

NO	DESCRIPTION	PART NAME	VENDOR	REMARK
C22	ELEC,10*20 105°C	SXE35V330uF RX35V330uF	SAMYOUNG SAMHWA	
C23	ELEC,10*20 105°C	SXE35V330uF RX35V330uF	SAMYOUNG SAMHWA	
C24	ELEC,5*11 85°C	SMS25V47uF SG25V47uF	SAMYOUNG SAMHWA	
C25	ELEC,5*11 85°C	SMS25V47uF SG25V47uF	SAMYOUNG SAMHWA	
C29	ELEC,5*11 85°C	SMS50V1uF SG50V1uF	SAMYOUNG SAMHWA	
C30	ELEC,5*11 85°C	SMS50V100uF SG50V100uF	SAMYOUNG SAMHWA	
C31	CERAMIC,50V 104Z	CCYV1H104ZB CGF1H104ZFK	SEMCO SAMHWA	
C32	CERAMIC,50V 104Z	CCYV1H104ZB CGF1H104ZFK	SEMCO SAMHWA	
C33	CERAMIC,50V 104Z	CCYV1H104ZB CGF1H104ZFK	SEMCO SAMHWA	
C34	CERAMIC,1KV 101	CKR3A101K06BS HCYE3A101KB	SAMHWA SEMCO	
	RESISTORS			
R1	CARBON	1/2W 560K-J	ABCO PILKOR	
R2	METAL-OXIDE	1W 220K-J MINI	PILKOR ABCO	
R3	METAL-OXIDE	1W 220K-J MINI	PILKOR ABCO	
R4	METAL-OXIDE	1W 150K-J MINI	PILKOR ABCO	
R5	FUSIBLE	NFR25 270-J	PILKOR	
R6	CARBON	1/4W 100-J	ABCO PILKOR	
R7	FUSIBLE	NFR25 390-J	PILKOR	
R8	WIRE WOUND, NON INDYCTIVE	1W 0.42-J MINI	HANMI	
R9	CARBON	1/8W 47K-J	ABCO PILKOR	

NO	DESCRIPTION	PART NAME	VENDOR	REMARK
R10	CARBON	1/8W 100-J	ABCO PILKOR	
R11	METAL-OXIDE	1W 470-J MINI	PILKOR ABCO	
R12	CARBON	1/8W 910-J	ABCO PILKOR	
R17	METAL-OXIDE	1W 680-J MINI	PILKOR ABCO	
R18	METAL-OXIDE	1W 680-J MINI	PILKOR ABCO	
R19	CARBON	1/8W 240-J	ABCO PILKOR	
R20	CARBON	1/8W 22K-J	PILKOR ABCO	
R24	CARBON	1/8W 100-J	ABCO PILKOR	
R25	CARBON	1/8W 100-J	ABCO PILKOR	
R26	CARBON	1/4W 3.9K-J	ABCO PILKOR	
R27	METAL-OXIDE	1W 1.2K-J MINI	PILKOR ABCO	
R28	CARBON	1/8W 2.4K-J	ABCO PILKOR	
	IC's			
IC2	REGULATOR, +12V 0.5A	KA78M12	SEC	
IC3	REGULATOR, -12V 0.5A	KA79M12	SEC	
IC4	SHUNT REG, 40V 0.1A	KA431AZ	SEC	
IC5	REGULATOR, +5V 1.5A	SI-3051N	SANKEN	
	DIODES			
BD1	BRIDGE, 600V 3.0A	D3SB60 RBV406	SHINDENGEN SANKEN	
D2	SWITCHING, 75V 0.15A	1N4148 1N4148	ROHM KOREA UNIZON	
D3	F.R, 200V 10A	D10LC20U	SHINDENGEN	

NO	DESCRIPTION	PART NAME	VENDOR	REMARK
D4	F.R, 200V 1.0A	D1NL20U EGP10D	SHINDENGEN GI	
D5	F.R, 200V 1.0A	D1NL20U EGP10D	SHINDENGEN GI	
D6	SCHOTTKY, 40V 3A	PK39 1N5822	SANKEN MOTOROLA	
D8	SWITCHING, 75V 0.15A	1N4148 1N4148	ROHM KOREA UNIZON	
D9	SWITCHING, 75V 0.15A	1N4148 1N4148	ROHM KOREA UNIZON	
D10	SWITCHING, 75V 0.15A	1N4148 1N4148	ROHM KOREA UNIZON	
ZD1	ZENER, 0.5W 20V	MTZ20C UZ20BM	ROHM KOREA UNIZON	
ZD2	ZENER, 0.5W 6.2V	MTZ6.2C UZ6.2BM	ROHM KOREA UNIZON	
ZD3	ZENER, 0.5W 27V	MTZ27C UZ27BM	ROHM KOREA UNIZON	
Q1	FET-POWER, 800V 4A	SSP4N80 2SK2669	SEC SANKEN	
Q2	SWITCHING, 80V 0.7A	KSC1008-Y	SEC	
Q3	SWITCHING, 80V 0.7A	KSC1008-Y	SEC	
Q4	SWITCHING, 500V 3A	KSC5020-O	SEC	
TRA1	TRIAC, 600V 12A	BTA12-600BM	SGS	
PC1	PHOTO COUPLER, 5KVac 50mA	PC123FY	SHARP	
PC2	PHOTO COUPLER, 5KVac 50mA	PC123FY	SHARP	
PC3	PHOTO TRIAC, 5KVac 50mA	MOC3061 S21MD4V	MOTOROLA SHARP	
TNR1	SURGE ABSSORBER	SVC14D471K INR14D471K	SAMHA ILJIN	
TNR2	SURGE ABSSORBER, AC 1KV 0.6A	D69ZOV102RA220	MAIDA	
NT1	THERMISTER, 13mm 8ohm	8D-13 KL13L-008	DSC SANGSHIN	
VR1	VARIABLE, 1/2W, 500 B TOP	EVNDJAA03B52 GF-06P 501	MATSUSHITA TOCOS	
CON1	CON-2P, AC INPUT	B2PS-VH	YUNHO	

NO	DESCRIPTION	PART NAME	VENDOR	REMARK
CON2	CON-3P, 2PIN LAMP	5096-02	MOLEX	
CON3	CON-20P, 20PIN	52330-2017	MOLEX	
LF1	LINE FILTER, 2mH 32*21 0.8*22T	LFPS-80022	JBM SUNGWON	
LF2	LINE FILTER, UU1116 0.4*40T	US40040	SUNGWON JBM	
L1	CHOCK COIL, 0.8*68T 210uH	TO-80-1603	SUNGWON	
B1	BEAD, 3.5*5	BFS3550AO-R2F	SAMHWA	
B2	BEAD, 3.5*5	BFS3550AO-R2F	SAMHWA	
RL1	RELAY, 24VDC 5A	KM11-M24F	CHUNGWON	
F1	FUSE-GLASS, 50T050H	250V 5A	TRIAD	
F2	FUSE-GLASS, 50T016H	250V 1.6A	TRIAD	
LFT2	TRANS-POWER	EER-28L	SUNGWON	